

## A review of the *Paralasa jordana*-complex from Central Asia with descriptions of new taxa

(Lepidoptera, Satyridae)

by

SERGEI V. CHURKIN & VLADIMIR A. PLETNEV

received 11.X.2011

**Summary:** The review includes all taxa belonging to the *Paralasa jordana*-complex of species. The lectotypes of 4 taxa are designated. Three new subspecies are described: *P. jordana kipnisi* **subspec. nov.** (Peter the Great Range, Gardani-Kaftar Pass), *P. jordana khramovi* **subspec. nov.** (North-East Alai, Ak-Bura R.), and *P. kusnezovi bosbutaensis* **subspec. nov.** (West Tian-Shan, Bosbu-Too Mts.). Field studies confirm that the complex consists of 3 species (at least) and 16 subspecies. The relations between them are discussed in detail.

**Резюме:** Обзор включает все таксоны, входящие в *Paralasa jordana*-комплекс. Выделены лектотипы 4 таксонов. Описано три новых подвида - *P. jordana khramovi* **subspec. nov.** (хр. Петра Первого, пер. Гардани-Кафтар), *P. jordana khramovi* **subspec. nov.** (северо-восточный Алай, р. Ак-Бура) и *P. kusnezovi bosbutaensis* **subspec. nov.** (Зап. Тянь-Шань, хр. Бозбу-Тоо). Результаты полевых исследований подтверждают деление комплекса на 3 вида (как минимум) и 16 подвидов, взаимоотношения между которыми тщательно проанализирована.

**Key words:** *Paralasa, jordana, kusnezovi, kolesnichenkoi, helios, roxane*, Lepidoptera, new taxon, Rhopalocera, Tian-Shan, Alai, Pamirs, Ghissar, glacial period.

**Introduction:** The representatives of the *Paralasa jordana*-complex of species are widely distributed in Central Asia - in Kyrgyzstan, Uzbekistan, Tadjikistan and, partly, Kazakhstan. More than 10 taxa have been described, the taxonomic status and relations of which are treated in very different ways by different authors.

The first author described, in partnership, *Paralasa kusnezovi kolesnichenkoi* CHURKIN & ZHDANKO, 2001 - a very distinctive taxon with unclear position. It could be a subspecies or a separate species, as it was marked in the original description. In spite of all efforts, the morphological work did not provide any serious arguments to solve the problem. After a couple of years the first author repeated the comparative analysis using much more material and much more time than before, but without any success. 200 specimens (♂♂ and ♀♀) were dissected, and many androconial scales were studied.

It was found out that the structures of the ♂ or ♀ genitalia are so variable (and often asymmetric) that the geographically based characters are totally obscured. It does not mean that actual distinctions are absent, but they were not found. Certainly, the genitalia characters “work” only in a very narrow territory of contacts between species as it is known for some glacial complexes - but how is it possible to find such a contact zone if the status of taxa is not understandable? The androconial scales show even more variability, and it is not possible to use this character for practical purpose.

In such a situation only field observations can provide true decisions. It was necessary to find the clinal variation in the colouration, possible hybridization between distinctive taxa - or find them flying nearly together/not far from each other to reveal their real relations. The authors have spent a lot of time during the last 10 years exactly for this work - with some success. Many new localities were found, and the material collected allows to describe some new taxa as well as to clarify some taxonomic problems.

The holotypes are deposited in the Darwin State Museum (Moscow), the paratypes are in the collections of the authors, B. KHRAMOV (S.-Peterburg), and P. BEDA (Moscow reg.).

**Abbreviations:** FW - forewings, HW - hindwings, TL - type locality, ZISP - Zoological Institute, Russian Academy of Science (St.-Petersburg), ZMHU - Zoologisches Museum Humboldt Universität (Berlin).

**Historical review:** The oldest taxon *Paralasa jordana* (STAUDINGER, 1982) was described from Jordan, North Alai and Hazret-Sultan, Ghissar. The lectotype has not been designated, but all authors agree to apply this name to the Alaian population.

*Paralasa roxane* (GRUM-GRSHIMAILO, 1887) was found in Transalai as well as *P. fasciata* (STAUDINGER, 1887); the latter taxon represents a synonym, this fact has never been a point of discussion. However, KORB published a replacement name for this taxon, *Paralasa unica* KORB, 1997; the reasons of this action are unclear; he also described the full synonym of *P. roxane* (GR.-GR.) confusing the type locality of the latter (KORB, 2010).

*Paralasa icelos* (GR.-GR., 1890) was described from Baisuntau, South Ghissar. This taxon has been practically always treated as a species, but nobody (!) published any serious arguments to support the position.

The taxon *subocellata* was described by STAUDINGER (1901) in his “Catalog” with a very short diagnosis. Now this name is used by taxonomists for the butterflies originating from Darvas - *Paralasa jordana subocellata* (STAUDINGER, 1901).

To the complex are also belonging: *P. kusnezovi* (AVINOV, 1910) from Chatkal, West Tian-Shan and *P. jordana summa* (AVINOV, 1910) from East Pamirs.

O. BANG-HAAS added the taxon *helios* (O. BANG-HAAS, 1927) which has been usually treated as a subspecies of *P. jordana* STGR. although its type locality - Chinese Aksu - is situated far away and the material from giant intermediate territories was unknown up to recent times. Another taxon - *styx* (O. BANG-HAAS, 1927) - originates from “Taschkend” (Kuraminsky range, West Tian-Shan) and is closely related to *P. kusnezovi* Av.

All other taxa were described recently:

- *shachristana* (STSHETKIN & STSHETKIN), 1991 from West Ghissar (but the type series includes several specimens from Kyrgyzsky range);
- *bogutena* V. A. & A. G. LUKHTANOV, 1994 from Boguty gorge (Zailiysky Alatau), originally described as a subspecies of *P. kusnezovi* (Av.);
- *seravschana* LUKHTANOV, 1999 from Seravshan (Zeravshan) range, often treated as a synonym of *P. j. subocellata* (STGR.).

- *issykkuli* LUKHTANOV, 1999 from SW Kungei Alatau (Issyk-Kul Lake) and *talastauana* LUKHTANOV, 1999 from "Aulie-Ata", both described as subspecies of *P. kusnezovi* (Av.);
- *kolesnichenkoi* CHURKIN & ZHDANKO, 2001 from Suusamyr range (described as a subspecies of *P. kusnezovi* (Av.);
- *alajense* KORB, 2004 from the eastern end of North Alai (Alaiku river) was described as a species basing on a single specimen. Two other taxa described by the same author are synonyms (see below).

Even this short list of valid names shows that the basic work is absolutely impossible without the restriction of the type localities. No lectotypes of the old taxa have been designated, except *P. kusnezovi* Av. (CHURKIN & ZHDANKO, 2001). This is a serious problem in such a difficult complex of related taxa with unknown status. This work is absolutely necessary and will be done below.

We will not discuss separately the positions of different authors (this is done below when it is really necessary), except one case. The species status for many taxa was stated by STSHETKIN & STSHETKIN (1991). It was marked that the genitalia have specific distinctions and intermediate forms were absent. However, the characters have never been described, even no figures of the genitalia were published in 1991 or later. According to the text of the paper, short investigations were really done. It is easy to find some distinctions between the genitalia of *Paralasa* ♂♂ from different localities because the genitalia are very variable and always not the same. However, a series of dissections shows that the actual problem is to find constant characters for the populations because the geographical variability is totally masked by the individual characteristics. We suppose that the paper published in 1991 reflects just the first previous results when the situation seemed simple. Later, the previously found distinctions were not confirmed and the work was not continued having no results important for a publication. In addition, the available material was very little or absolutely absent from many ranges (that resulted in the idea that intermediate forms were absent). The primitive style of this paper becomes clear from uniting material from West Ghissar and North Tian-Shan in the single type series of *P. k. shachristana* (STSHETKIN & STSHETKIN).

Although the position of STSHETKIN & STSHETKIN has never been confirmed by serious analyses, the main ideas were repeated in different publications including "Guide to the butterflies of the Palearctic region" (DELLA BRUNA et al., 2002).

The position of TSHIKOLOVETS ([2004], 2005) will be not a point of criticism because it has no arguments, zoogeographical understanding and simple logic but his photo-bank is important for the study.

Summarizing all available names and known type localities, it is easy to see that the material from the giant territory bordered by Chatkal range, Issyk-Kul Lake, Naryn city and East Alai is nearly absent - only one taxon was described from Suusamyr by the first author of the present paper and one more specimen from Alaiku river was recently named by KORB. This above mentioned area was the main field for this work.

Finally, a lot of material was collected in Inner Tian-Shan where representatives of *Paralasa* are not rare and were found at both slopes of Moldo-Too, Baibiche-Too, Dzhaman-Too and other ranges. Interesting specimens were found at the northern edges of Fergansky range, not far from Toktogul Lake as well as between Gulcha town and Taldyk pass (NE Alai). All these populations represent relatives of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO; some clines of characters were observed, no deep hiatuses were found, so all taxa distributed here may have only the subspecies status.

Another situation was found in Uzun-Akhmat range situated between true West Tian-Shan and Suusamyr system. This is a "green" area where habitats of *Paralasa* are not frequent, as a rule; no material from here was previously known. The existing population represents a line of hybrids between typical *P. k. kusnezovi* (Av.) and *P. k. kolesnichenkoi* CHURKIN & ZHDANKO; some butterflies are clearly yellowish while other are reddish.

The population inhabiting Bosbu-Too Range has some specific characters, and will be described below, that can be easily confirmed because this range (or, better, a giant single mountain) is separated from other mountains by wide river valleys and forest areas.

The northern Alai represents a more difficult case compared to Tian-Shan. As we marked above, the eastern part (Kurshab and Karadarja river basins) is inhabited by the butterflies closely related to *P. k. kolesnichenkoi* CHURKIN & ZHDANKO representing the darkest version of it (*P. k. alajense* KORB). The distribution area of *P. jordana* (STGR.) covers the basin of Aksu river (between Kuruk-Sai and Kollektorsky ranges). It was logical to suppose (especially after the confirmed hybridization in Uzun-Akhmat) that the whole North Alai is populated by darkened butterflies with simple cline of small characters. In reality, the basin of Isfaramsai river (situated between Kollektorsky and Kichik-Alai ranges, the next basin eastward from Aksu) is populated by *P. j. roxane* (GR.- GR.) - this taxon came from Alai Valley.

The hybridization between "*roxane*" and "*jordana*" was found by CHURKIN and PETROV in 1995 during special search according to the request of TUZOV - it was important because of the preparation of the "Guide to the butterflies of Russia and adjacent territories". As a result, the status of *roxane* was made only subspecific. However, we still have no true final conclusion (see below).

The investigation of Ak-Bura river basin situated between Kurshab - Gulcha and Isfaramsai - Surmetach was started only in 2008 but resulted in the most serious discovery. The butterflies from Ak-Bura look like a yellow variant of *P. j. roxane* (GR.- GR.) and deeply differ from dark *P. k. alajense* KORB from Gulcha. Even traces of the hybridization between these two populations are absent while the distance is less than 20 km. Moreover, the differences from *P. j. roxane* (GR.- GR.) distributed westwards are also very deep and genetic exchange seems to be doubtful. The new taxon will be described below as a subspecies of *P. jordana* (STGR.) but the species status is waiting. Worth to note, that all these races are parapatric - i.e., we never found two taxa in one river basin (except one case based on old labels).

In all cases, the distribution areas of externally similar *jordana* and *alajense* are separated by the distribution areas of two (!) other taxa. This fact is a simple and serious confirmation that we have at least two different species, one of which is distributed mainly in Tian-Shan and the other mainly in Ghissar-Alai. The oldest species names are *P. kusnezovi* (Av.) and *P. jordana* (STGR.), respectively.

Below, each taxon will be discussed separately together with all geographical data. It is not necessary to give detailed descriptions because many taxa have the same and considerable variability of many small characters. Thus, some features (fringes, HW underside, etc.) will be marked only in special cases. We do not give figures of the genitalia because distinctions were not found. A synopsis is also senseless because this was done by TSHIKOLOVETS ([2004], 2005); at the same time different authors applied so many different species names to subspecific taxa that such a list will be only a base for confusion.

Worth to note, that "old" specimens changed the colours and it is better to use the characters of such butterflies very carefully. The blackish colour gradually becomes brown while the reddish scales are often becoming brownish, the whole colouration sometimes (not

always!) becomes “dirty”, losing the contrast and brightness. Very important to note that often the black androconial area becomes paler so that only the cell part of androconium keeps the true black colour. It looks like only the cell part represents the true androconium while the anal part of the basal area is just blackish without functional scales. However, the actual androconial scales could be easily found everywhere in the ♂ FW basal part. The density of the androconial scales is very variable, different kinds of the scales can be found everywhere; the total variability is so high that the characters seem to be not useful for taxonomic purposes - except the size and shape of the androconium as a whole. We will use the terminology “androconium” for all the dark basal part of the ♂ FW.

One more important character was found during the study: the colouration of the basal anal zone of FW (between the cell and anal vein, in ♂♂ or ♀♀). This part is blackish, sometimes the blackish scales cover only the area under the cell, sometimes the whole area between cubital and anal veins. The development of this “suffusion” is relatively important in the taxonomic sense but - as in many other cases - not well working at the species level. It needs further studies, and now we will use it only from time to time.

We listed only the material which was studied in detail. The material which was observed in different private collections or museums is mentioned, if it is necessary.

## Systematic part

### 1. *Paralasa kusnezovi* (AVINOV, 1910)

1.1. *Paralasa kusnezovi kusnezovi* (AVINOV, 1910) [col. pl 1: 1, 2, 3, 4, 5, 6a, 6b, 7 (the holotype of *styx*), 8, 11]

*Erebia mani* NIC. var. *kusnezovi* AVINOV, 1910, Horae Soc. ent. Ros. 39: 249-250, Tab. XIV: 11.

Lectotype ♀, figured by Avinov (Tab. XIV, fig. 11) and designated by Churkin et Zhdanko, 2001: 192-193. Paralectotypes are deposited in ZISP and British Museum.

TL: Kyrgyzstan, West Tian-Shan, SE Chatkal range, Padscha-Ata, Myngzhelki.

Material: 3 ♂♂, 3 ♀♀, West Tian-Shan, Chatkal Mts., Chap-Chama Pass, 19.07.2000, 3000 m (? – S. Ch.), A. KLIMENKO leg.; 2 ♂♂, same loc., 25.06.2000; 1 ♀, same loc., 15.07.2002; 5 ♂♂, 5 ♀♀, same loc., 2700-2800 m, 9.07.2001, S. CHURKIN leg.; 2 ♂♂, 2 ♀♀, West Tian-Shan, Chatkal Mts. (western slope), Chanach Pass, 11.-12.07.2001, 2500-2900 m, S. CHURKIN leg.; 2 ♂♂, 2 ♀♀, same loc., 2600 m, 14.07.1999, K. KOLESNICHENKO leg.; 1 ♂, same loc., 2800 m, 15.07.2002; 5 ♂♂, 2 ♀♀, West Tian-Shan, Sandalash Mts., Chakmak-Su, 2300-2700 m, 14.-17.07.2000, A. KLIMENKO leg.; 17 ♂♂, 7 ♀♀, West Tian-Shan, Talassky Alatau, Karabura Pass, 2500-3000 m, 15.-20.07.1989, G. SAMODUROV; 2 ♂♂, Talassky Alatau, 10 km N Karabura Pass, Taldy-Sai vall., 2000-2100 m, 23.-25.06.2004, KHRAMOV B. leg.; 2 ♂♂, 2 ♀♀, West Tian-Shan, Chatkal Mts., Chingan Mt., 23.06.1985, V. TUZOV leg.; 2 ♂♂, same loc., 23.07.1990, Nikifirov leg.; 1 ♂, 1 ♀, Chatkal Mts., east from Tashkent, 2100 m, 06.1994; 3 ♂♂, 3 ♀♀, same loc., 23.06.1985, A. SHADENKOV leg.; 10 ♂♂, 5 ♀♀, West Tian-Shan, Kuraminsky Mts., Kamchik Pass, 2300-2500 m, 11.-13.07.1997, S. VASHCHENKO leg.; 10 ♂♂, 3 ♀♀, same loc., 1-10.07.1998; 2 ♂♂, same loc., 2300m, 5.06.199, KHOT'KO leg.

**Description and diagnosis:** The specimens of the nominotypical populations from the eastern Chatkal are large: FW length usually is 26 mm (25-27 mm) in ♂♂ and ♀♀ (the ♀♀ are not definitely larger than the ♂♂). The butterflies from Kuraminsky Range are slightly smaller. The butterflies from the other side of Chatkal River Valley (Sandalash and Karabura Pass) are definitely smaller (♂♂ 23-24 mm, ♀♀ 24-25,5 mm).

♂: The androconium is very narrow and is restricted to the cell. Only very rarely it is slightly enlarged towards the anal vein under the cell. The band is chestnut-reddish, very large and wide. The ♂♂ from East Chatkal have lighter FW colour than those from West Chatkal and especially from the northern part of the distribution area. The marginal black border is narrow (1 mm or less, as a rule) and usually has no distinct inner border; the anal margin (i.e. the marginal part of the wing below the anal vein 2A) mainly reddish. The eye-spot is medium-sized (as a rule) and has a small white pupil inside and a narrow not contrasting yellowish ring around the eye-spot.

The FW underside is practically totally chestnut-reddish with an eye-spot.

The HW upperside is black and the underside is uniform blackish without developed greyish suffusion, the postdiscal band is not distinct. The postdiscal row of small whitish dots is not contrasting.

♀: Similar to the ♂, showing typical for the group sexual dimorphism. The yellowish ring around the eye-spot is sometimes widened but sometimes reduced and never contrasting. The black margins are narrower than in the ♂♂. HW underside is often blackened (as in the ♂♂) but sometimes more or less greyish, even with a slightly visible grey postdiscal band. The abdomen below is black and distinctly darker than the colour of the HW underside, while in other subspecies it has the same colour.

**Distribution and variation:** The most typical and only slightly variable butterflies inhabit the eastern half of Chatkal Range, especially the western slopes of it (i.e., situated in Chatkal valley). The eastern slopes (from Sary-Chelek Lake to Kassan-Sai River) are not so investigated but these populations contain some hybrids with *P. k. kolesnichenkoi* CHURKIN & ZHDANKO (see colour plate). It means that the nominotypical populations are more variable - and it seems logical (see below). The western part of Chatkal (Chingan Mts.) is populated by darkened butterflies, where the form with slightly enlarged androconium is more common (the androconium in this case covers only the nearest area under the cell vein being not dense here); FW blackish margins become wider with more or less distinct inner border. The colour of the band is changing from the typically pale eastern variant to deep in the western populations. The butterfly from Kamchik Pass (Kuraminsky Range) was described under the name *styx* O. BANG-HAAS, 1927. The type specimen (O. BANG-HAAS, 1927, Taf. 7: 3) represents the holotype by the monotypy (according to ICZN) and has slightly enlarged androconium. LUKHTANOV (1999) was the first who pointed out the similarity between the nominate *P. kusnezovi* Av. and the type of BANG-HAAS. He described the taxon *talastauana* LUKHTANOV, 1999 for the butterflies from the north-western part of West Tian-Shan which were usually mentioned in the literature under the name “*styx*”. Unfortunately, he did not discuss the characters of the typical *P. k. kusnezovi* Av. and used a very short and strange type series for his “*talastauana*” (LUKHTANOV, 1999: 140) - as a result, CHURKIN preferred to keep “*styx*” while the status of “*talastauana*” was considered as unclarified (CHURKIN & ZHDANKO, 2001: 194). Worth to note, that the latter article includes some more small mistakes in the part devoted to the clines in the distribution area of *P. kusnezovi* Av. which are checked again now and corrected.

We have studied many specimens from Kamchik (including two series marked in the “Material” and three large series in different



museums and private collections). The population includes about 10% of the ♂♂ specimens with large androconium; however, specimens similar to true "*talastauana*" represent quite rare exceptions. Without doubts, such a form represents only a result of the genetic exchange with *P. k. talastauana* LUKHTANOV (as it is known for many other taxa, for example, yellow *helios*-forms among the populations of *P. k. alajense* KORB). To confirm this opinion, we can compare the colour photos of "*kusnezovi*" and "*styx*" figured in DELLA BRUNA et al. (2002). The first butterfly originates from Chimgan while the second is taken from Kamchik - both are nearly identical; darker than *Paralasa k. kusnezovi* (Av.) but obviously paler than true *P. k. talastauana* LUKHTANOV.

We also have at our disposal a good colour photo of the *styx*-holotype which really represents the form typical for Kamchik, belonging to the nominate subspecies without any questions. The type fully agrees with the original description where the characters of "*styx* sensu Tuzov" are not marked at all. Thus, *Paralasa kusnezovi kusnezovi* (AVINOV, 1910) = *Paralasa kusnezovi styx* (O. BANG-HAAS, 1927).

The ranges situated at the western and northern sides of Chatkal Valley (Sandalash and Karabura Pass) are populated by the butterflies which are similar to the nominotypical but distinctly smaller, the eye-spot statistically larger, the yellow ring wider and contrasting.

NOTE. Some entomologists informed us that the Kamchik vicinity is populated by two different *Paralasa* taxa which are flying separately - one is small and dark while the other is large and paler. The material examined did not confirm it; both forms can be found together, intermediate individuals are widely distributed (see above). Even the photographs of the available series belonging to two "races" are not known to the authors. However, constant differences in size between the large *Paralasa k. kusnezovi* (Av.) and small butterflies from Sandalash/Karabura is a true fact and has no simple explanation. If two different forms fly together, the situation becomes really obscure.

**Biology:** Dry stony slopes, rocks - habitats typical for the complex. Practically all known populations inhabit the altitudes between 2000 and 3000 m.a.s.l.

**Etymology:** The taxon was named after a well-known Russian entomologist KUSNEZOV.

### 1.2. *Paralasa kusnezovi talastauana* LUKHTANOV, 1999 (= *P. k. styx* auct.) (col. pl. 1: 9, 10, 12)

Atalanta 30(1/4):140. The holotype and the single paratype ♀ are deposited in the Museum A. Koenig, Bonn.

TL: "Aulie-Ata" [Talassky Alatau (western edges), south from Dzhambul town].

Material: 2 ♂♂, West Tian-Shan, Talassky Alatau, Aksu-Zhebagly nature reserve, Taldy-Bulak, 2800 m, 25.07.1995, A. ZHDANKO leg.; 1 ♀, Talassky Alatau, Aksu-Zhebagly res., Darbaza, 28.07.1991, A. ZHDANKO leg.; 1 ♀, Talassky Alatau, Aksu-Zhebagly res., Zhusalay, 2800 m, 20.07.1995, A. ZHDANKO leg.; 2 ♂♂, 1 ♀, West Tian-Shan, Talassky Alatau, vic. of Vysokoye, June 1914, DUBLITZKYI leg.

**Description and diagnosis:** FW length 22-24 mm in the ♂♂ and 24-25,5 mm in the ♀♀.

♂: The black and dense androconium is enlarged and covers the whole basal area under the cell between cubital and anal veins, so that the main postdiscal chestnut-red band is narrow and does not penetrate this area towards the FW base. In addition, the main colour of the band is deeper than in the nominate race, forming a very contrasting and unusual version of the colouration. The eye-spot is sometimes slightly enlarged, white pupil normally developed. The underside is nearly the same as in the nominate subspecies.

♀: Similar to the ♀♀ of *P. k. kusnezovi* (Av.), but usually the base of the FW is obviously darkened (not only reddish) and the yellow spot around the eye is enlarged. The underside is grey, as a rule, not simply darkened as it is typical for the nominate subspecies.

**Distribution and variation:** The known area of the distribution is small and covers only the western end of Talassky Alatau. There must be some cline of the characters of *P. kusnezovi* (Av.) in the south-north direction of West Tian-Shan, and true populations of *P. k. talastauana* LUKHTANOV represent only the northern and partly isolated end of the cline.

The subspecies is quite rare in the collections and it is the base of misidentifications. Only old specimens (1914, leg. DUBLITZKYI) collected a hundred years ago were found for Tuzov et al. (1997). LUKHTANOV also used two old specimens found in the Museum A. Koenig, Bonn as the types (it was the base to include into the type series one more - freshly collected - specimen from Kyrgyzsky range, which zoogeographically cannot belong to this taxon, see below).

The series of available specimens are too small to make a final decision about the smaller characters of the subspecies.

We also cannot make a final decision about an old and short series from Karzhantau (deposited in the Darwin State Museum, Moscow). The material from the western half of Kyrgyzsky Range is unknown.

**Biology:** Seems to be typical for the species.

**Etymology:** Toponymic name.

### 1.3. *Paralasa kusnezovi bosbutaensis* subsp. nov. [col. pl. 1: 17 (holotype), 18, 19a, 19b, 20]

Holotype ♂, Kyrgyzstan, Bosbu-Too Mts., southern slopes, 2500-2800 m, 2.07.2008, S. CHURKIN leg.

Paratypes: 14 ♂♂, 8 ♀♀, same data, S. CHURKIN, V. PLETNEV & S. SALUK leg.; 1 ♂, 1 ♀, Bosbu-Too Mts., northern, Bos-Byik v., 1900-2100 m, 1.07.2008, S. CHURKIN leg.

**Description and diagnosis.** ♂: FW length 24 mm in the holotype, 24-25 mm in the paratypes.

FW: androconium large, having the same size as in *P. k. talastauana* LUKHTANOV; the main band is chestnut-reddish but small and narrow, often does not touch the anal vein; FW inner margin always fully blackened. The eye-spot is variable in size (from small to large), the yellowish spot around the eye is only rarely ring-shaped, but usually widened with unclear borders and gradually dissolves towards the anal margin in the main reddish colour. The white pupil is usually developed but sometimes not well visible (if the eye-spot is small). All veins are darkened, crossing the band, thus forming a special variant of colouration (in contrast to all known taxa of the species). The short whitish-grey parts of the fringes are much more contrasting than in other subspecies. HW upperside blackish. FW underside reddish with a yellowish spot around the eye.

HW underside darkened as in the nominate subspecies but some grey suffusion is developed, not dense but forming an unclear postdiscal band.



♀: FW length 25-27 mm. The basal part of FW is dark-brownish with just slight reddish hue, only the area between the band and this basal part is clearly reddish. The margins are widened compared to *P. k. kusnezovi* (Av.), with distinct inner border. The yellow spot around the eye is wider and dissolves in the reddish colour towards the anal margin. Other characters as in the ♂♂, with the typical features of sexual dimorphism.

**Distribution and variation:** The new subspecies populates Bosbu-Too - an isolated mountain range situated at the northern border of Fergana Valley. The variability is not great; it confirms that the new taxon represents an actually isolated subspecies but not a heterogeneous hybrid population.

Worth to note that all specimens of *Paralasa* of this complex figured in the Kyrgyzian and Tadjikian books published by TSHIKOLOVETS ([2004], 2005) are identical to the material examined by us except one pair with the label "Padsha-Ata, V. SOVINSKY leg." (TSHIKOLOVETS, 2005, pl. 6: 5, 6). This pair is very similar to the representatives of the new subspecies but was collected at the type locality of *P. k. kusnezovi* (Av.). Of course, *bosbutaensis*-version of the colouration may be found in the nominotypical populations because both taxa are only subspecies, and a genetic exchange existed in the past for sure (even some hybrids with the *kolesnichenkoi*-type of colouration are known, while the genetic and geographical distances in this case are much higher). However, another version of explanation seems to be more probable: we have just one more case of an incorrect old label. In addition to the specimens mentioned in "Material", we saw a lot of *P. k. kusnezovi* (Av.) from different parts of Chatkal but true *bosbutaensis*-like individuals were not found - it must be a rare case, an aberration for these populations. In such circumstances the two specimens collected together by one collector at the type locality of *P. k. kusnezovi* (Av.) represent a very doubtful case. We cannot exclude that the series collected in 1908 by GRIGORIEV and (together or separately?) by SOVINSKY contains specimens from different localities simply united under one label with general data. It is necessary to remember that several cases of wrong labels were found in museum collections (CHURKIN, 2002).

**Biology:** Typical for the species. No individuals were found lower than 2000 m.a.s.l. (even in the typical habitats of *Paralasa*) and preferred the altitudes from 2400 - 2500 m.a.s.l. up to the top of Bosbu Mt.

**Etymology:** Toponymic name.

1.4. *Paralasa kusnezovi kolesnichenkoi* CHURKIN & ZHDANKO, 2001 [col. pl. 2:1-12, 26-28; pl. 1: 25, 26 (aberrations)]

Helios 2:195-197, pl. 16: 13,14,15. The holotype is deposited in the Darwin State Museum, Moscow.

Type locality: Kyrgyzstan, Suusamyр Mts. (Sarykamysb range), vic. of Kyzyl-Oi.

Material: 10 ♂♂, 5 ♀♀, Kyrgyzstan, Suusamyр Mts., Kyzyl-Oi vic., 2200-2500 m, 19.-20.07.1999, K. KOLESNICHENKO leg. (paratypes, part of the type series); 7 ♂♂, 6 ♀♀, Kyrgyzstan, Suusamyр Mts., 5 km fr. Kyzyl-Oi, 5.07.2000, S. CHURKIN leg. (paratypes, part of the type series); 9 ♂♂, 9 ♀♀, same loc., 2400-2800 m, 20-21.07.2006, S. CHURKIN, V. PLETNEV & S. SALUK leg.; 1 ♂, 4 ♀♀, Moldo-Too Mts. (northern slope), Kavak-Too Range, Minkush vic, 2700-3100 m, 30.07.2008, S. CHURKIN & V. PLETNEV leg.; 4 ♂♂, 2 ♀♀, Moldo-Too Mts. (northern slope), Karakiche R., 2900-3250 m, 18.07.2007, S. CHURKIN & B. KHRAMOV leg.; 2 ♂♂, 1 ♀, Moldo-Too Mts. (northern slope), 5 km W Karakiche v., 2500-2600 m, 22.07.2006, S. CHURKIN leg.; 9 ♂♂, 7 ♀♀, Moldo-Too Mts. (southern slope), 50 km NEE Kazarman, 2300-2700 m, 10.-21.07.2005, CHURKIN S. leg.; 1 ♂, 1 ♀, same loc., 2000-2100 m, 7.-9.07.2006, CHURKIN S. leg.; 5 ♂♂, 5 ♀♀, same loc., 10.-20.07.2008, CHURKIN S. leg.; 6 ♂♂, 4 ♀♀, Moldo-Too Mts. (southern slope), Kichine-Kindyk r., upper stream, 3200-3600 m, 12.07.2008, CHURKIN S. leg.; 12 ♂♂, 14 ♀♀, Fergansky Mts. (northern edges), Karasu Lake, 2200-2500 m, 2.-7.07.2001, S. CHURKIN, A. ZHDANKO & S. OBUKHOV leg.; 1 ♂, 1 ♀, Fergansky range, Isphan-Dzhailo loc., 15 km SE Karakul v., 25.06.2007, 2000-24000 m, S. CHURKIN & S. SALUK leg.; 1 ♀, Suusamyр Mts. (western sl.), Chichkan R., 25 km N Toktogul town, 7.08.1994, S. SALUK leg.; 1 ♂, Fergansky Mts., Kvara-Unkur vall., 1800 m, 11.06.1998, TALANTZEV A. leg.; 1 ♂, Baubash-Ata Mts., NW from Baubash-Ata v., 3000 m, 17.07.1997, V. TREMASOV leg.; 1 ♂, 5 ♀♀, Kyrgyzsky Mts., Aksu r., 24.07.2009, 2000-2600 m, V. TREMASOV leg.; 1 ♂, Baidulu range, 34 km S Dolon pass, 1600 m, 14.07.1998, BERDYEV leg.

**Description and diagnosis:** FW length 24 mm (23-24,5 mm) in the ♂♂ and 25 mm (24-26 mm) in the ♀♀ (being constant in the populations from the type locality). The specimens from Fergansky range (Karasu lake) have the same size. The butterflies from Moldo-Too are definitely smaller: ♂♂ - 23 mm (22-24 mm) and ♀♀ - 24 mm (22-25 mm). The difference in size depends on the population (locality) but does not depend on the altitude or year of collecting.

♂: The androconium is narrow and in the population from the type locality it is restricted by the cell; very rarely it is slightly enlarged and covers a narrow area just below the cubital vein. The ♂♂ from both slopes of Moldo-Too and other localities differ in larger androconium which expands towards the anal vein. However, the band is large and only slightly narrower than in the typical populations; inner margin always partly reddish. The colour of the FW band is golden-yellow with narrow reddish borders. The eye-spot has normal size, as a rule, with a whitish pupil inside. The black margin is not narrow (width usually 1,5-2 mm) and with distinct inner border. HW upperside blackish.

FW underside double-coloured: basal part reddish, main band yellowish. HW underside dark with not dense but contrasting greyish suffusion, the postdiscal line is distinct, white dots are comparatively large and contrasting.

♀: More conservative, with the colouration opposite to the situation with the ♂♂. The FW basal part is totally reddish while the band is golden-yellowish with narrow reddish borders. Sometimes the external border of the band is unclear (as an exception, all black wing margins are totally reduced - see the photo of the aberration from the northern Moldo-Too). Sometimes the eye-spots are enlarged and have two white pupils inside (very rarely in the nominotypical population but in 50% of the ♀♀ from Fergansky range). The FW underside is double-coloured - with reddish basal part and yellowish band.

The HW underside is paler than in the ♂♂ and often with dense grey suffusion, but sometimes more similar to the ♂ underside with contrasting white dots.

**Distribution and variation:** This subspecies undoubtedly is a key-taxon in the understanding of the subspecific structure of *P. kusnezovi* (Av.) in general. It was described as a subspecies but it could be bona species because of deep external differences from the western *P. k. kusnezovi* (Av.) and the eastern *P. k. issykkuli* LUKHTANOV. At that time material from the territories situated in the northern and southern directions from Suusamyр was not available or totally absent. Now the situation has changed and it is clear that all taxa distributed in Tian-Shan represent only one species with complicated but understandable system of clines, with

hybridization at the borders of all taxa.

The distribution area of this subspecies includes two parts: a small territory at the lower stream of Kekemer river is populated by the typical form, while the  $\sigma\sigma$  with enlarged androconium and more developed reddish suffusion are common in all other parts of the distribution (the  $\omega\omega$  are very similar everywhere, being only more yellowish and bright in the Kekemer macropopulation). As a whole, the distribution area covers the northern half of Fergansky range sensu lato, the mountains situated north from Naryn valley from Fergansky Range to Naryn city, Suusamyr and Dzhungal river valleys and part of the northern slopes of Kyrgyzsky Range - i.e. it covers the main part of the Naryn river basin with tributaries and the eastern Kyrgyzsky range (the southern tributaries of Naryn river are populated by the related *P. k. alajense* KORB).

The specimens collected at the tops of Moldo-Too (from the southern slopes) are practically identical with the individuals from very low altitudes and argues more for the geographically based differences than the ecological ones.

Theoretically, it is possible to divide the taxon into two different subspecies: true *kolesnichenkoi*-subspecies distributed in Suusamyr and North Moldo-Too and another unnamed taxon distributed at the southern slopes of Moldo-Too/Songkel-Too/Baidulu. The differences between such two taxa would be clinal. In addition, in this case the status of the butterflies from Kyrgyzsky Alatau, Fergansky range and Kara-Kiche would be not clarified - logically, all of them need separate subspecies names in this case, especially because each mentioned macropopulation has its own combination of characters. We prefer to keep one taxon with some marked clines within the distribution area.

Worth to note that the hybridization provides many strange or even abnormal forms -  $\sigma\sigma$  with additional (second) black eye-spot, some specimens have very small eye-spots while other may have very large eye-spots with two white pupils. The typical population from Suusamyr is the most uniform, but includes some rare specimens with unclear reddish spot at the HW upperside - as it is known in some *P. jordana* (STGR.) specimens. These spots are small and not bright, and such specimens are only aberrations.

a) Hybridization with *P. k. kusnezovi* (Av.): The distance between the lower stream of Suusamyr river and Chatkal range is very large while material from this intermediate area was nearly absent. One typical *P. k. kolesnichenkoi* CHURKIN & ZHDANKO  $\omega$  was collected by S. Saluk near Toktogul, while another  $\omega$  similar to *P. k. kolesnichenkoi* CHURKIN & ZHDANKO in the colouration was known from the eastern slopes of Chatkal (Sary-Chelek Lake, Aflatun r., 25.07.1997, A. KLIMENKO leg.). A lot of time was spent in efforts to find *Paralasa* between the known distribution areas of the taxa. In 2006, a population was found in Uzun-Akhmat river valley, at the southern edges of Talassky Alatau (see col. pl. 1). The label is: Talassky Alatau, 35 km NW Chon-Aryk v., 2200-2700 m, 28.06.2006, S. CHURKIN, S. SALUK & V. PLETNEV leg. The habitat was typical for the species - rocky mountain slopes. The small collected series includes true *kusnezovi*-variants with FW band totally reddish, true *kolesnichenkoi*-variants with clearly yellow FW band and several butterflies with mixed characters. Such kind of variability is unusual even for *Paralasa* but obviously reflects the result of hybridization between the red *P. k. kusnezovi* (Av.) and yellow *P. k. kolesnichenkoi* CHURKIN & ZHDANKO. The  $\omega\omega$  look intermediate, the yellow band is narrow while the reddish colour is not chestnut, i.e. not so deep as in the nominate subspecies. The size is more variable than in the typical populations of both taxa: FW length is 22-24 in the  $\sigma\sigma$  while the  $\omega\omega$  are large, 25 and 25,5 mm.

The fact of hybridization confirms the subspecies status of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO and explains how the *kolesnichenkoi*-variants appear in East Chatkal.

b) Hybridization with *P. k. bosbutaensis* **subspec. nov.** and *P. k. alajense* KORB: The south-western limit of the distribution of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO is situated at the northern edges of Fergansky Range: we have a large series from Karasu lake shores, several specimens from Karakul and Arslanbob. One specimen from Arslanbob is figured in the Kyrgyzian book by TSHIKOLOVETS (2005, pl. 63: 19). The genetic exchange between these populations and the nearest *P. k. bosbutaensis* **subspec. nov.** must be difficult now, but traces of it are obvious: some  $\omega\omega$  (50%) have dark-brown base of the wing and FW veins are more darkened than usually, the FW reddish colour is distinctly deeper compared to the nominotypical  $\omega\omega$ . If the first character could be a result of connection with *P. k. alajense* KORB, the darkened veins and chestnut hue represent a true sign of *P. k. bosbutaensis* **subspec. nov.** In addition, 50% of the  $\omega\omega$  from Karasu have double white pupils and very large size of the eye-spot as a whole [we found such specimens only among *P. k. kusnezovi* (Av)]. The specimens from Baubash-Ata are so reddish that their status needs clarification.

The area between the southern and the northern edges of Fergansky range is rather green and damp, and habitats suitable for *Paralasa* are almost absent (we visited Kugart river basin many times but *Paralasa* has never been found); it makes the genetic exchange between *P. k. kolesnichenkoi* CHURKIN & ZHDANKO and *P. k. alajense* KORB through the western slopes of Fergansky range too difficult.

c). Hybridization with *P. k. issykkuli* LUKHTANOV: The specimens from Minkush and Karakiche, i.e. from the northern macroslopes of the Moldo-Too system are not only smaller and darker but have more developed reddish suffusion at FW band. A simple genetic exchange with *P. k. issykkuli* LUKHTANOV seems to be very difficult now because these taxa have significant differences in the altitudes and flight periods. Moreover, the distribution areas of the taxa are divided by the chain of Dzhungal - Kara-Katta ranges (this chain divides the Dzhungal river basin populated by *P. k. kolesnichenkoi* CHURKIN & ZHDANKO and Chu river basin, the area of *P. k. issykkuli* LUKHTANOV). The watershed (Kyzart Pass) is damp and greenish, no populations of *Paralasa* were found here in spite of all efforts. However, a marked cline of the characters shows that hybridization between the two taxa takes place now or, at least, took place in the past - moreover, the butterflies from the northern Moldo-Too are similar to those from the northern Kyrgyzsky range, where the distribution areas of these two taxa are also connected.

The material originating from Kyrgyzsky range seems to be very important and must be discussed in detail.

The series from Aksu river (Kyrgyzsky range, not so far from Tjy-Ashuu Pass) is similar to the series from northern Moldo-Too. It represents just a dark and small version of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO, with partly enlarged androconium; the yellow band is slightly narrowed, the reddish borders of the band are widened, while the  $\omega\omega$  with fully reddish basal bands are typical for the subspecies (only the size is small, FW length of the  $\omega\omega$  is 24 mm only).

We have one more  $\sigma$  with the label "Kyrgyzsky Alatau, 25 km S Merke, Mulaly Mt., 2900 m, 09.08.1996, A. ZHDANKO leg.". This  $\sigma$  is small (22 mm), with wide reddish borders of the band and with small dull red postdiscal spot on the HW upperside.

Another  $\sigma$  from Kara-Balta (just between Aksu and Merke rivers) was included by LUKHTANOV in the type series of *P. k. talastauana* LUKHTANOV. Uniting specimens from Kara-Balta and western edges of Talassky Alatau in one type series is surely wrong, but this

uniting outlines some similarity between dark *P. kusnezovi talastauana* LUKHTANOV and dark variant of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO, and genetic exchange.

One more series was found in ZISP, the label is “[Kyrgyzsky range], Alamedin r., 3.-4.07.1910, coll. AVINOV”, it was collected by A. GOLBECK. The specimens are too old and lost some colours but represent true hybrids between *P. k. issykkuli* LUKHTANOV and *P. k. kolesnichenkoi* CHURKIN & ZHDANKO. The ♂♂ are very similar to the ♂♂ of *P. k. issykkuli* LUKHTANOV from Boom Valley (being more reddish than the specimens from Aksu; the band is obviously narrower with a small eye-spot; etc.) while the ♀♀ are only a very dark version of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO with reddish (not brownish) basal part of the FW.

**NOTE.** The above mentioned specimens from Alamedin are definitely the paratypes of *P. jordana shachristana* (STSHETKIN & STSHETKIN), their labels being identical to the data of the type specimens (STSHETKIN & STSHETKIN, 1991: 65). However, the paratype labels are absent. This case represents one more but a typical mistake, when the material from two very different zoogeographical districts is united in one subspecies without any logic and without any efforts to find and study the material from the intermediate territories.

Another possible way of genetic exchange between these two taxa crosses Baidulu range via Dolon Pass. The territory situated northwards is populated by *P. k. issykkuli* LUKHTANOV. We have a confirmation of this idea - two ♀♀ collected by PLUJUSCH represent a slightly paler version of this taxon (Baidulu, Sary-Bulak vic., 2300 m, 15.07.1998). The ♂ from the southern slopes of Baidulu is definitely similar to the dark *P. k. kolesnichenkoi* CHURKIN & ZHDANKO. We are sure that the new material will confirm our conclusions.

**Biology:** The butterfly mainly prefers steep rocky slopes, but sometimes can be found at clayish cliff precipices. Local. Worth to note that this subspecies may fly at very different altitudes and easily crosses the western part of Moldo-Too where we found it from 2000 m a.s.l. up to 3600 m a.s.l. (the tops of the range). At the same time, it is practically absent at the high altitudes of Baidulu and neighbouring ranges because of the unsuitable (wet and cold) climatic conditions.

**Etymology:** The taxon was named after K. KOLESNICHENKO (Moscow), a professional entomologist who found this butterfly first.

#### 1.5. *Paralasa kusnezovi alajense* KORB, 2004 (col. pl. 2: 13, 14, 15a, 15b, 16, 17, 18, 19, 20)

Alexanor 23 (2): 116, Fig. 2. Holotype in the collection of JU. KOSAREV, Nizhnyi Novgorod, Russia.

**NOTE.** This subspecies was described by KORB in a wrong way: one ♂ which KORB saw in the collection of Mr. KOSAREV represents the type series, the photo is absent but a black-and-white scheme of the colouration is figured; the description is insufficient and shows only that the author is not very familiar with the group and that he has no material for a real comparison. The FW length of the holotype is 23,5 mm, that is marked as a very small size (!) for the *jordana*-complex - moreover, the latter includes *P. semenovi* AVINOV, 1910 and some other species. Nevertheless KORB's taxon represents a good subspecies and the name is valid.

**TL:** Alaiku River, Alaiku village vicinity. The range is given as Alai; actually Alaiku river divides SW edges of Fergansky Range and NW edges of Alai.

**Material:** 6 ♂♂, NE Alai, Gulcha r., Kichi-Karakol v., 2500-2800 m, 24.06.2008, S. CHURKIN, V. PLETNEV, S. SALUK leg.; 7 ♂♂, 2 ♀♀, NE Alai, Gulcha r., 4 km NE Kichi-Karakol v., 2400-2450 m, 25.-26.06.2008, S. CHURKIN, V. PLETNEV, S. SALUK leg.; 9 ♂♂, Inner Tian-Shan, Dzhaman-Too, Karasu r., 15-29.07.2010, S. Churkin, V. Pletnev, S. Saluk leg.; 28 ♂♂, 12 ♀♀, Inner Tian-Shan, Baibiche-Too Mts., Beuroily loc., 2650-2900 m, 10.-11.07.2006, S. CHURKIN, V. PLETNEV, S. SALUK leg.; 2 ♂♂, Inner Tian-Shan, Baibiche-Too Mts., 18 km S Uchkun v., 2350-2400 m, 21.07.2009, S. CHURKIN & B. KHRAMOV leg.; 1 ♂, Inner Tian-Shan, Baibiche-Too Mts., Kalkagar r., 19 km S Baetovo, 2900-3000 m, 9.07.2007, S. CHURKIN leg.; 1 ♂, Inner Tian-Shan, Baibiche-Too Mts., Orto-Syrt v, 3000 m, 15.07.2006, S. CHURKIN leg.

**Description and diagnosis:** The size is little variable: the FW length is 23-24 mm in the ♂♂ and 22-24,5 mm in the ♀♀.

♂: The androconium is enlarged and extends up to the anal vein (similar to that in the dark form of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO, or even larger). The band is golden-yellow with reddish borders; the inner margin is partly reddish as it is usually. The eye-spot is usually medium-sized, but the variability is comparatively large, the white pupil is normally developed but not always. The HW upperside blackened without any traces of reddish colour.

FW underside double-coloured. HW underside greyish with an indistinct postdiscal band.

♀: Easily differs from the *P. k. kolesnichenkoi* CHURKIN & ZHDANKO ♀♀ because of the dark-brownish basal part of the FW, the true reddish colour can be seen only in the external half of the basal band. The yellow band is large and wide.

**Distribution and variation:** In general, the distribution area covers a wide latitudinal “band” from East Alai to Naryn city.

The colouration changes to the dark *kolesnichenkoi*-variant from the western to the eastern end of the area (and this way of genetic exchange is more effective now than the short, but difficult way along the western slopes of Fergansky range), but with some interesting additions.

The western Dzhaman-Too population has more contrasting FW band with distinctly reduced reddish suffusion and includes a rare form of the ♂♂ with clearly bright yellow band [this variant has some similarity to *P. k. helios* (O. BANG-HAAS) see colour plate]. Another form of the ♂♂, with a reduced eye-spot and even without white pupil, but with extended and dense reddish suffusion on the FW band, was found in the Baibiche-Too population. Such specimens of *P. k. alajense* KORB show the traces of the combination of *issykkuli*- and *helios*-colouration; it confirms that the genetic exchange between Issyk-Kul and Inner Tian-Shan populations was possible during some time in the past (see above the notes about the Baidulu material).

In a summary, it is logical to suppose that *Paralasa* from Inner Tian-Shan represents a cline from bright and large *P. k. kolesnichenkoi* CHURKIN & ZHDANKO to dark and smaller *P. k. alajense* KORB, with some additions of the genes of the northern *P. k. issykkuli* LUKHTANOV and the southern *P. k. helios* (O. BANG-HAAS).

We have seen no material from At-Bashi but there is no doubt that *Paralasa* will be found here [with more traces of the former hybridization with *P. k. helios* (O. BANG-HAAS)]. On the opposite, specimens from Chaartash range are known to the authors (and belong to this subspecies as well), but unfortunately are absent in the collections examined. Worth to remember, that intermediate forms or even traces of hybridization with the western taxa of *P. jordana* (STGR.) are totally absent.

**Biology:** The typical populations prefer clayish and limestone steep slopes/rocks, while the eastern populations live at usual rocky/stony slopes. The flight period is definitely later than in *P. j. khramovi* subspec. nov. (see below).



**Etymology:** Toponymic name.

1.6. *Paralasa kusnezovi helios* (O. BANG-HAAS, 1927) [col. pl. 4: 18-20, 21 (lectotype), pl. 1: 27-28]

*Erebia mani helios* O. B.-HAAS, 1927, Horae Macrolepidopterologicae regionis Palaearcticae 1: 46, Taf. 7: 4. Syntypes in the STAUDINGER coll. (ZMHU).

**Lectotype designation:** To preserve the stability of the zoological nomenclature, and to avoid further confusion through identification, a syntype ♂ of *Erebia mani helios* O. B.-HAAS is designated as the lectotype for the taxon; the syntype is standing at the first position in the box and has the locality label “Thianshan/Aksutal” [Chinese Aksu River valley]. The designated lectotype is figured on col. pl. 4: 21 (upperside). It has all subspecific distinctions (yellow colour of the band, small eye-spot with small reduced white pupil) of the taxon. The selected locality is exactly the most well-known place for *P. k. helios* (O. BANG-HAAS). The lectotype is deposited in ZMHU and will be provided with a printed red label “Lectotype/ *Erebia mani helios* O. B.-HAAS, 1927 / S. CHURKIN & V. PLETNEV design., 2011”. All other syntypes now must be treated as paralectotypes. The type series originally included some butterflies from Korla and Kuruktag, but we were unable to examine these specimens.

TL: the valley of Chinese Aksu river (after the lectotype designation).

Material: 3 ♂♂, 3 ♀♀, Central Tian-Shan, Sary-Dzhas r., Kaingdy-Katta Mts., Tashkoro v., 2500-2700 m, 4.-7.07.1989, S. CHURKIN leg.; 3 ♂♂, 3 ♀♀, same loc., 3000 m, 10.07.1989, G. LEKAREV leg.; 2 ♂♂, 1 ♀, same loc., 2700 m, 18.07.1986, KILEVICH leg.; 2 ♂♂, same loc., 8.07.1988, JU. SHCHERBINA leg.; 1 ♂, same loc., 8.07.1991, JU. SHCHERBINA leg.; 8 ♂♂, 6 ♀♀, same loc., 2500 m, 07.1998; 3 ♀♀, same loc., 2700 m, 19.07.1991, LIMONOV leg.; 1 ♂, same loc., 2700 m, 9.07.1984, I. PLUJUSCH leg.; 1 ♂, Kyrgyzian Kashgaria, Chinese Kyzyl-Su r., Alai Mts. (south-eastern edges), Irkeshtam, 3050 m, 17.07.2005, S. CHURKIN leg.

**Description and diagnosis:** Average FW length 24-25 mm (23-25,5 mm) in the ♂♂ and 25-27 mm (24-28 mm) in the ♀♀. The specimen from Irkeshtam is small - 22 mm.

♂: FW band bright yellow, the reddish suffusion is visible only in the anal zone between the blackish androconium and the band. The size of the androconium shows the same variability as in *P. k. kolesnichenkoi* CHURKIN & ZHDANKO: in the nominotypical population (see the lectotype photo) the androconium is relatively small, while the butterflies of the well-known population from Kaingdy-Katta demonstrate a large blackish area extending to the anal vein. The eye-spot is small, as a rule, often with a very faint white pupil (sometimes even without the pupil). The HW upperside is totally dark.

FW underside double-coloured. HW underside uniform greyish (i.e. with a dense grey suffusion), the row of white spots is not contrasting; the postdiscal band is almost indistinct.

♀: Basal part of FW mainly dark-brownish (as in *P. k. alajense* KORB) with narrow reddish external side; the band is very wide and yellow. Other characters as in the ♂♂, only the HW underside is pale and grey so that the postdiscal band is usually not visible; basal part of FW underside with an unusual yellowish suffusion - as a result, the reddish and yellow parts are not contrasting.

**Distribution and variation:** The distribution area includes the valley of Chinese Aksu river and Sary-Dzhas as a tributary. We suppose that this subspecies populates all southern borders of Tian-Shan (however, this needs confirmation). The first author collected a specimen in Kyrgyzian Kashgaria (Irkeshtam area) which looks like a typical *P. k. helios* (O. BANG-HAAS), only smaller. The presence of specimens with bright-yellow colouration in the areal of *P. k. alajense* KORB was marked above.

Externally, this subspecies is similar to *P. k. shachristana* (STSHETKIN & STSHETKIN) from Seravshansky range (West Ghissar zoogeographically). The material from Inner and North Tian-Shan was practically unknown even 15 years ago, and the similarity between the Ghissarian and Chinese *Paralasa* was the base to unite all yellow subspecies into one species. At first, the identification is not hard: *P. k. helios* (O. BANG-HAAS) has more extended wings, reduced eye-spot (often with reduced white pupil) and another hue of the yellow colour, while *P. k. shachristana* (STSHETKIN & STSHETKIN) has a more or less square shape, normally developed eye with always distinct white pupil and orange hue of the narrower band. On the other hand, these differences are not so abrupt. Indeed, it is nearly not possible to find simple species distinctions between the two species complexes [*P. jordana* (STGR.) with the Ghissarian taxon and *P. kusnezovi* (Av.) with *P. k. helios* (O. BANG-HAAS)]. Only field data about the presence/absence of the hybridization between different taxa may reveal their true relations and status.

Finally, the similarity between these two taxa could not appear without reasons and in all cases does not represent simply the result of ecological conditions - it shows that the relations existed in the past and draws light to the history of the complex in study (see “Discussion”).

Worth to note that one specimen from Irkeshtam is not enough to be sure that there is no hybridization between the *helios*-like butterflies from Chinese Kyzyl-Su and *P. j. roxane* (GR.- GR.) from Kyrgyzian Kyzyl-Su (i.e. Alai valley), but such hybridization is highly doubtful according to all available data.

**Biology:** In our opinion, this taxon is more associated with clay/limestone slopes than with true rocky slopes. The lowest altitude is not known to us and represents serious interest - including the altitudes of the type series which was collected in different parts of the southern Tian-Shan.

Etymology: Helios (Greec) - the Sun.

1.7. *Paralasa kusnezovi issykkuli* LUKHTANOV, 1999 (col. pl. 2: 21-25)

Atalanta 30 (1/4): 140-141. The holotype is deposited in the collection of the Zoological Institute, St.-Petersburg.

*Paralasa bogutena ekinchi* KORB, 2008 **syn. nov.** - Eversmannia 15-16: 69-70 (TL: Issyk-Kul Lake, Terskey Alatau, 2000 m., Dzhety-Oguz v.).

TL: Issyk-Kul Lake, SW Kungei Alatau, Turaigyr (25 km NE Rybach'e).

NOTE. The type series includes only two specimens from Turaigyr, Kungei Alatau (including the holotype); the main part of the series originates from Boom valley and more than four pairs were collected at the shores of Orto-Takoi water reserve (lake). We have not examined the Turaigyr material, but the probability that it can be different from other populations is absent.

Material: 6 ♂♂, 3 ♀♀, NW edges of Terskey Alatau Mts., Karatau range, shores of Orto-Takoi lake, 1800 m, 20.06.1998, S. CHURKIN leg.; 3 ♂♂, 1 ♀, same loc., 25-20.06.2000; 3 ♂♂, 2 ♀♀, same loc., 1800-2200 m, 13.07.1998, V. TUZOV & S. CHURKIN leg.; 9 ♂♂, 5 ♀♀, same loc., 24.06.2000, A. KLIMENKO leg.; 6 ♂♂, 6 ♀♀, same loc., 1800-1900 m, 9.06.2006, S. CHURKIN leg.; 5 ♂♂, 3 ♀♀, western edges of Kungei Alatau, Boom valley, Kok-Mainak v., 1900-2000 m, 7.07.1998, S. CHURKIN & I. CHERNIAK leg.; 3 ♂♂, 1 ♀, Kungei Alatau, Boom valley, Uibulak loc., 2300-2500 m, 9.07.1998, S. CHURKIN leg.; 2 ♀♀, Baidulu range, Sary-Bulak vic., 2300 m, 15.07.1998, I. PLUJUSCH leg.

**Description and diagnosis:** FW length 23-24 mm (22-25 mm) in the ♂♂ and 24-25 mm (23-25 mm) in the ♀♀. The specimens from Kungei Alatau are statistically larger. No altitude differences observed.

♂: The dark androconial area (the androconium) is enlarged and covers all basal part of the FW. The band is yellowish with dense reddish suffusion especially under the eye-spot; the true yellow colour is developed only around the eye, but it is not ring-shaped. The band as a whole is small and narrow, does not reach the anal vein 2A. The eye-spot is small, with small but distinct white pupil. FW inner margin totally darkened. HW upperside totally darkened. FW underside similar to that of the nominate subspecies, i.e. totally reddish with a small yellow area around the eye. HW underside darkened with slightly developed grey suffusion, postdiscal band not well visible.

♀: The basal part of FW is dark-brown with narrow reddish border; the band is yellowish with dense reddish suffusion and does not reach the anal vein. Other characters as in the ♂♂ with typical for the species sexual dimorphism.

**Distribution and variation:** The subspecies is very distinctive, but includes a developed cline of characters. The butterflies from Boom have statistically smaller androconium, developed reddish suffusion with obviously more contrasting colouration as a whole, while the FW becomes more extended and angled (the individuals from Orto-Takoi have an unusual habitus with not contrasting upperside and not angled FW). Such a combination shows the genetic exchange with both neighbouring subspecies (more details about the cline see above), but the connections with the northern *P. kusnezovi kolesnichenkoi* CHURKIN & ZHDANKO seem to be more numerous now than with the reddish *P. k. bogutena* V. A. & A. G. LUKHTANOV. The population from southern shores of Issyk-Kul ("ekinchi") is practically identical with the Orto-Takoi's one (*P. kusnezovi issykkuli* LUKHTANOV was simply omitted in the original KORB's description, thus, it was not difficult to find the difference between *P. b. ekinchi* KORB and other known taxa!).

As a whole, the distribution area covers Chur river basin from the upper stream to the northern edges of Kyrgyzsky range as well as the shores of Issyk-Kul Lake.

**Biology:** Practically all known altitudes are very low, definitely lower than in related subspecies (except the closest *P. k. bogutena* V. A. & A. G. LUKHTANOV) - and this represents a very serious barrier for genetic exchange with neighbouring subspecies. However, some contacts are possible - a thorough search has found that the Orto-Takoi population occupies not only the shores of Orto-Takoi, but all stony habitats up to the tops of the mountains near the lake (more than 2200 m). The same was found in Boom - if LUKHTANOV collected his types near the road (altitude 1500 m a.s.l.), the first author studied steep slopes of the valley and found *Paralasa* specimens at 2500 m a.s.l. Certainly, some specimens may be found even higher, but later in the season. This information logically agrees with the existence of intermediate populations at Kyrgyzsky Range (see the data above about the butterflies from Alamedin river).

On the contrary, all efforts to find intermediate forms with *P. kusnezovi kolesnichenkoi* CHURKIN & ZHDANKO near Kyzart Pass or to find *P. k. issykkuli* LUKHTANOV specimens at high altitudes at the southern limits of its distribution area were not successful. We suppose that such populations may be found, but being very local and not dense - i.e. the actual genetic exchange between these parts of the distribution of taxa is blocked now. The situation at Dolon Pass is discussed above.

**Etymology:** Toponymic name.

1.8. *Paralasa kusnezovi bogutena* V. A. & A. G. LUKHTANOV, 1994 (col. pl 1 : 21-24)

Atalanta 25 (1/2): 167-169, Farbtaf. 5b: 1-4. The holotype is deposited in ZISP.

Type locality: Kazakhstan, Zailiysky (Transili) Alatau Mts., Boguty range.

Material: 1 ♂, 1 ♀, paratypes, Zailiysky Alatau, Boguty Gebirge, 1300 m, 10.06.1993, V. & A. LUKHTANOV; 5 ♂♂, 1 ♀, same loc., 16.06.1996, V. LUKHTANOV leg.; 8 ♂♂, 3 ♀♀, same loc., 2.-4.06.2004, A. ZHDANKO leg.; 4 ♂♂, 2 ♀♀, SE Kazakhstan, Ili r., Nurly v., 29.04.2004; 1 ♀, Zailiysky Alatau, Turgen r., 1700 m, 27.08.1989, A. ZHDANKO.

**Description and diagnosis:** FW length 23-24 mm (22-24,5 mm) in the ♂♂ and 24-25 mm (24-26 mm) in the ♀♀. The ♀ from Turgen is very large - 27 mm.

♂: FW basal part widely blackened, androconium very large. The band is totally reddish (with the same hue as in the nominate subspecies), narrowed from the anal side and does not reach the anal vein. FW inner margin totally dark. Eye-spot very small, white pupil reduced and usually fully absent, the yellow ring around the eye not contrasting, dull and narrow. HW upperside totally blackened. FW underside similar to that in the nominate subspecies and *P. k. issykkuli* LUKHTANOV. HW underside darkened with only traces of grey suffusion, postdiscal band not developed.

♀: FW basal part dark-brownish with reddish border (this reddish colour is not so dense as that of the band), the ring around the eye-spot is more developed and enlarged, sometimes the yellow colour is deeper and bright. Other characters as in the ♂ excluding sexual dimorphism typical for the complex.

**Distribution and variation:** Even in Boguty some specimens (not very rare, but especially among the ♀♀) have a small but distinct white pupil inside the eye-spot. The large ♀ from Turgen valley has this pupil normally developed. Such specimens become more similar to *P. k. issykkuli* LUKHTANOV, especially if the yellow spot around the eye is enlarged and loses true ring-shape. Sometimes the eye-spot is greatly reduced to a small black dot, such a form being very rare and known only for this taxon.

The distribution area covers the eastern part of the Zailiysky Alatau mountain system, while the western part is most probably populated by intermediate populations between all three North Tianshanian subspecies.

**Biology:** The altitudes reported for the type series are 900-1300 m, but we have seen no specimens collected at altitudes less than 1300 m. Easy to understand that actual altitudes are only slightly less than those of *P. k. issykkuli* LUKHTANOV, while the flight period is practically the same. It means that genetic exchange between the populations of both taxa could be easy, but the actual situation

seems to be opposite: habitats available to the taxon are very rare in the main part of Zailiysky Alatau. Material from the western part of Zailiysky Alatau is nearly absent (except one ♀ collected by ZHDANKO), while the Boom population of *P. k. issykkuli* LUKHTANOV demonstrates more tendency to *P. k. kolesnichenkoi* CHURKIN & ZHDANKO than to *P. k. bogutena* V. A. & A. G. LUKHTANOV.

**Etymology:** Toponymic name.

## 2. *Paralasa jordana* (STAUDINGER, 1982)

### 2.1. *Paralasa jordana roxane* (GRUM-GRSHIMAILO, 1887) (col. pl. 3: 1-8, 21, 22; col. pl. 422-24)

*Erebia Roxane* GRUM-GRSHIMAILO, 1887, Memoires sur les Lépidoptères 3: 401, 392 note. (Col. pl. 4: 23, 24 lectotype of *roxane*.)

*Ereb.[ia] Jordana* STGR. var. *Fasciata* STAUDINGER, 1887, Stettin. Ent. Z. 48: 57. (Col. pl. 4: 22 lectotype of *fasciata*.)

*Ereb.[ia] Mani* NICÉV. v. *Subocellata* STAUDINGER, 1901, Catalog der Lepidopteren des palaearctischen Faunengebietes. 1: 49.

(Col. pl. 3:21, 22 holotype of *subocellata*.)

*Paralasa tolkien* KORB, 2009 **syn. nov.**, Alexanor 23: 146-147 (TL: Aram-Kungei).

NOTE. This taxon has the central and most important place among all *P. jordana* (STGR.) subspecies and represents the best position to start the review. The taxon *fasciata* STGR. has always been treated as a synonym, but this synonymy was never fixed by the lectotype designation. On the contrary, the name *subocellata* STGR. has always been applied to the Darvasian populations, while it was based on a single aberration collected in the same place as *fasciata* STGR. and also represents just a synonym. We have not found any remarks about examination of the type of “*subocellata*”.

**Lectotype designations:** To preserve the stability of zoological nomenclature, and to avoid further confusion through identification, a ♂ syntype of *Erebia Roxane* GRUM-GRSHIMAILO, 1887 is designated as the lectotype of the nominate taxon. The syntype is deposited in ZISP and has the following labels:

“Колл.[екция] Вел.[икого] Князя Николая Михайловича [Coll. Grand Duke NIKOLAI MIKHAILOVICH]” and “Карасу [Karasu r.]”. The designated lectotype is figured on the col. pl. 4: 23 (upperside), 24 (underside). It has all subspecific characters (dull and large reddish band on the HW upperside, bright yellowish FW band with reddish borders, darkened HW underside with distinct basal band). The selected locality is exactly pointed by GRUM-GRSHIMAILO: “...between Karasu and Aram[-Kungei]” and is situated in Altyn-Dara valley, the most well-known place for *P. j. roxane* (GR.- GR.). The lectotype will be provided with a printed red label “Lectotype/*Erebia Roxane* GRUM-GRSHIMAILO, 1887/S. CHURKIN & V. PLETNEV design., 2011”.

Three more syntypes were found in ZISP: one pair with labels “14.VII.[18]84/ Арамъ-Кунгей [Aram-Kungei]” and one more ♀ with the label “♀/ Арам-Кунг[ей] [Aram-Kungei]”. All these specimens have additional labels “Колл.[екция] Вел.[икого] Князя Николая Михайловича [Coll. Grand Duke NIKOLAI MIKHAILOVICH]” and will be provided with printed paralectotype labels. The syntypes from Dzhekaingdy (Koksu basin) have not been found.

Important to add that the photos of the type series published by TSHIKOLOVETS (2005: LXV) are too darkened and show wrong colours (the reddish bands are nearly not visible, the FW basal parts are often too dark), this being only a technical mistake.

For the stability of zoological nomenclature it is important to have the name-bearing type *Erebia Jordana* STGR. var. *Fasciata* STAUDINGER O. 1887 fixed by a lectotype designation. We designated as a lectotype the syntype ♂ standing on the first position in the box and having the labels “Origin.” and “Transalai/ 86. Maur[er]”. The lectotype is deposited in ZMHU, figured on the col. pl. 4: 22 (upperside) and will be provided with a printed red label “Lectotype/*Ereb.[ia] Jordana* STGR. var. *Fasciata* STGR., 1887/ S. CHURKIN & V. PLETNEV design., 2011”. Other syntypes become the paralectotypes. This butterfly is practically identical to the lectotype of *roxane* GR.- GR. and originates from the same TL (western part of North Transalai - and, most probably, Altyn-Dara basin). Thus, the name *fasciata* represents a synonym of *roxane* GR.- GR. as it was pointed out by many authors.

**The taxon *subocellata* STAUDINGER:** This taxon was described in the “Catalog” with an unclearly stated locality “Ferg. m.”. It was based only on a single specimen, the type represents the holotype by monotypy and is deposited in ZMHU. The photo of this specimen is figured in the col. pl. 3: 21 (upperside), 22 (underside). The labels are as follows: “Origin.” and “Transalai/(Pamir)/88. Maur[er].” The description is extremely short and states only one distinction - an additional small yellow eye-spot situated at the costal angle of the HW underside; it is clearly seen on the photos. This strange eye is the base of the name - “*subocellata*”. In fact, it represents just an abnormally enlarged underside whitish-yellowish dot, one of five or six dots of the postdiscal row; moreover, the development of this eye-spot is different on the left and right wings. All important subspecific characters are the same as in *P. j. roxane* (GR.- GR.) (including typical shape and colour of the HW upperside reddish band); the locality is Transalai, the distribution area of the last subspecies. Thus, the specimen represents only an aberration of *P. j. roxane* (GR.- GR.). Worth to remember that O. BANG-HAAS placed “*subocellata*” exactly as an aberration of “*Paralasa mani fasciata* (STAUDINGER)” and repeated the main feature - the additional underside eye (1927: 46). It is not understandable why in such circumstances the name “*subocellata*” was applied to the *Paralasa* populations from Peter the Great range with a different upperside colouration and without any additional eye-spots. However, the name is valid, thus, *Ereb.[ia] Mani* NICÉV. v. *Subocellata* STAUDINGER, 1901 = *Ereb.[ia] Jordana* STGR. var. *Fasciata* STAUDINGER, 1887.

TL: Karasu and Aram-Kungei springs, Altyn-Dara, West Transalai (after the lectotype designation).

The taxon *tolkien* KORB, 2009, a true synonym of *P. j. roxane* (GR.-GR.), is described basing on 5 ♂♂ (no ♀!) taken from Aram-Kungei, while the author supposed that the type locality of *P. j. roxane* (GR.- GR.) is Kyzyl-Art Pass without any arguments.

Material: 9 ♂♂, 6 ♀♀, West Transalai, Aram-Kungei r., 2900 m, 10.07.1992, S. CHURKIN leg.; 5 ♂♂, 3 ♀♀, same loc., 25.07.1992, V. TITOV leg.; 8 ♂♂, 16-21.07.1992, B. KHRAMOV leg.; 2 ♂♂, 2 ♀♀, same loc., 3000 m, 12.07.1994, V. TITOV leg.; 5 ♂♂, 5 ♀♀, same loc., 3500 m (? - S.Ch.), 10-20.07.1998; 1 ♂, 1 ♀, South Alai, Kyzyl-Eshme vall., 2700 m, 10.07.1995, B. KHRAMOV leg.; 7 ♂♂, 1 ♀, South Alai, Kyzyl-Chashma, 10 km E Daraut-Kurgan, 3100 m, 4.-8.07.2004, A. ZHDANKO leg.; 14 ♂♂, 8 ♀♀, North Alai, Isfaramsai r., 2400 m, Langar v., Kaingdy r., 13.-14.07.1995, S. CHURKIN, A. PETROV, L. SALMANOVA leg.; 1 ♂, North Alai, 70 km S Kyzyl-Kiya v., Maidantau, 3000 m, 13.07.1997, I. PLUJUSCH leg.. 1 ♀, Alai, Tengizbai pass, 3000 m, 14.07.1999.

In addition, two important series are deposited in ZISP - one from the vicinity of Daraut-Kurgan, with the altitude stated as 2500 m (southern slope of Alai) and the other from Tengizbai Pass (Alai); both were collected by AVINOV in 1908.



**Description and diagnosis:** FW length 23-25 mm in the ♂♂ and 24-27 mm in the ♀♀. The butterflies from South Alai have the same size; the specimens from North Alai are statistically larger (♂ usually 24-25).

♂: Androconium similar to that of the dark form of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO being obviously enlarged, but not widened between the cubital and anal veins - so that the band is not considerably narrowed at the anal side of the FW. The band is mainly yellow or often whitish-yellow, especially at the costal side where the reddish suffusion is usually reduced - in this case the reddish colour is deep only between the androconial basal area and the anal part of the band. In the opposite variant of the colouration the anal half of the band is fully reddish with contrasting dark-reddish veins; this is not typical but not very rare. The eye-spot is medium-sized with well developed pupil; the variability is not great (however, a very rare form with small reduced *helios*-like eye is found). The fringes are slightly and statistically more contrasting than it is usual for the complex.

HW upperside with wide dull dark-red postdiscal band from the cell end to the narrow black margin. The borders are not contrasting, sometimes the reddish colour is partly and slightly suffused by not dense pale scales (as it is in the *fasciata*-lectotype).

FW underside double-coloured. HW underside usually dark with only slightly developed grey suffusion but postdiscal/basal bands are distinct. Sometimes the postdiscal line is shaded externally by comparatively dense whitish-yellowish-grey scaling (looking like a diffuse spot). The row of white dots is sometimes slightly yellowish.

♀: Similar to the ♂, with typical sexual dimorphism. The band is larger with more developed whitish-yellowish colour, the basal part of the wing is mainly reddish with small dark-brown base, the eye-spot is statistically larger than in the ♂♂. HW underside often with dense grey suffusion.

**Distribution and variation:** The butterflies from both sides of Alai valley are identical - the same is true for AVINOV's material from Tengizbai. The butterflies from North Alai are also very similar and do not need another name. Only a few statistical differences can be noticed: the underside is more greyish while the HW reddish band is more often covered by slight yellowish suffusion, while the FW band is more often whitish. If this feature might be the result of the relations with *P. j. khranovi* **subspec. nov.**, the second character presents the opposite tendency - we need to outline that the individuals with actually intermediate characters are unknown. The distribution area includes Alai valley and the basin of Isfaramsai River (the territory between Kichik-Alai and Kollektorsky ranges, the central part of North Alai). The connection with the nominate subspecies will be discussed below. The material examined from Alai Valley shows no traces of hybridization with *P. k. helios* (O. BANG-HAAS) from Chinese Kyzyl-Su, but the butterflies from the eastern part of the valley are still unknown.

**Biology:** Typical for the species. Inhabits all altitudes from 2000 m to the tops of Alai range.

**Etymology:** Roxane - Slavonic feminine name.

## 2.2. *Paralasa jordana kipnisi* **subspec. nov.** (*subocellata* auct.) (col. pl. 3: 17 (holotype), 18, 19, 20, 23, 24.

Holotype ♂ (col. pl. 3: 17), [Tadjikistan, Peter the Great range], Гардан-и-Кафтар (Gardani-Kaftar Pass), 16.VII.1911, [leg. A. GOLBEK], к.[оллекция] Авинова (coll. AVINOV) (ZISP).

Paratypes: 2 ♂♂, 1 ♀, same loc., 15.VII.1911 and 16.VII.1911, [leg. A. GOLBEK], к.[оллекция] Авинова (coll. AVINOV) (ZISP); 1 ♂, xp. Петра Великого, пер. Гардан-и-Кафтар, 14.VII.1911, А. Гольбекъ, к.[оллекция] Авинова (Peter the Great range, Gardani-Kaftar pass, 14.VII.1911, leg. A. GOLBEK, coll. AVINOV) (ZISP); 1 ♂, same loc., 30.VI.1911, [leg. A. GOLBEK]; 3 ♂♂, 1 ♀, Tadjikistan, Peter the Great range, Ljangan v., 2200 m, 2.-3.7.2011, V. TREMASOV leg.; 12 ♂♂, 7 ♀♀, Tadjikistan, Muksu r., Muk vic., 2400-2700 m, 22.-30.07.2009, S. SALUK leg.; 3 ♂♂, 2 ♀♀, same loc., 2500-2800 m, 6.-10.08.2009, S. SALUK leg.; 3 ♂♂, Tadjikistan, Peter the Great range, Garm, Sus plateau, 1., 6. and 10.07.1994, A. IVANOV leg.; 1 ♂, 1 ♀, Tadjikistan, Peter the Great range, Tadhikobad, Ganishou, 2700 m, 23.7.2011, V. TREMASOV leg.; 8 ♂♂, Tadjikistan, Darvas system, Mazorsky Range, 4.-13.07.2011, 2700-3800 m, V. TREMASOV leg.

Additional material: 4 ♂♂, Muksu r., Kandob v., 2400-2600 m, 17.07.2009; S. SALUK leg.; 1 ♂, Muksu r., Depshar v., 2200-2500 m, 18.07.2009; S. SALUK leg.; 2 ♂♂, Darvas range, Khaburabot pass, 10.07.1984, V. TUZOV leg.

Some important specimens are figured in TSHIKOLOVETS ([2004]: pl. 43, 44): two specimens from the northern slopes of Darvas range (Khaburabot Pass) and two from SW Alai.

**Description and diagnosis.** ♂: FW length 24 mm in the holotype and 23-25 mm in the paratypes. The androconium is enlarged and very dense; it is widened under the cell so that the yellowish band is narrow [*P. j. roxane* (Gr.- Gr.) has wide FW band]. The reddish suffusion between the androconial part and the band is often reduced at the costal part of the band, but often well developed and even dense at the anal part of the band. As a rule, the veins are dark reddish and contrasting against the main yellow colour of the band - even in the cases when the reddish suffusion is reduced. The fringes are contrasting [more than in *P. j. roxane* (Gr.- Gr.) and much more than it is usual in the complex].

HW upperside with narrow reddish band with distinct borders; this band often has contrasting veins, especially when the reddish colour is covered by unclear yellowish-whitish suffusion. The size of the band is variable, but it is always smaller and more contrasting than in *P. j. roxane* (Gr.- Gr.), although darkened specimens with brighter reddish colour represent intermediate forms to the new taxon.

FW underside double-coloured, but the band is reddish and small, divided into several spots by dark-reddish veins.

HW underside with grey-yellowish postdiscal suffusion is situated externally from the postdiscal line. The general grey suffusion sometimes very dense, sometimes only slightly developed.

♀: FW length 24,5-26 mm. The ♀♀ are similar to the ♂♂ with sexual dimorphism typical for the complex. The eye-spot is larger, the band is wider with extended yellow zone comparing with ♂♂ but, distinctively narrower than in *P. j. roxane* (Gr.- Gr.), the HW upperside spot is wider and HW underside with more dense suffusion.

**Distribution and variation:** The distribution area covers Peter the Great range, Darvas range (northern slopes) and some mountains around - i.e. the basins of Vakhsh-Surkhob and Obikhingou rivers (material from Khosratisho and southern slopes of Darvas is absent). The butterflies of the nominotypical population from the middle stream of Obikhingou have a small HW band with more developed light suffusion as well as more developed yellowish-greyish suffusion on the HW underside. The northern representatives have deeper and brighter red colour of the HW band, the light suffusion is usually absent or only slightly developed, the size of

spots is larger. We suppose that it is senseless to separate the butterflies from the southern part of the areal from the northern populations - the latter only include some *roxane*-like specimens because of the genetic exchange with the neighbouring subspecies (see colour plates). However, we have never seen individuals which could be possible to confuse with real *P. j. roxane* (Gr.- Gr.). Several ♂♂ from the medium/upper stream of Muksu r. differ from other *P. j. kipunisi* **subspec. nov.** specimens in their small size and obviously more developed light suffusion on both sides of the HW (see the colour plate). These ♂♂ become similar to the typical individuals from Obikhingou and show a tendency to *P. j. summa* (Av.) from East Pamirs. At the same time, the yellowish HW underside with developed postdiscal whitish-yellowish suffusion recalls same features of *P. ida* (Gr.- Gr., 1890). Worth to note, that the specimens from Darvas range are very yellowish and demonstrate the same tendency. This new problem will be a point of the discussion below.

The north-eastern border of the distribution area is Karamyk Pass; the north-western border is SE edges of Seravshansky (Zerafshan) range just near the Matcha mountain system. The specimens from Tamdykul figured in TSHIKOLOVETS ([2004]: pl. 53: 16-17) belong to this taxon as well (even the yellowish suffusion is conspicuous).

Two very interesting ♀♀ were collected at Ak-Terek river - the western tributary of Sokh river, the nearest large valley to Aksu, where the nominate taxon is distributed. These two ♀♀ are very similar to *P. j. kipunisi* **subspec. nov.**, but the size of the HW bands is small; their status will be discussed below.

**Biology:** Seems to be typical for the species. The altitudes are typical too, as well as the flight period which is late only if the butterflies fly in very severe conditions close to giant glaciers (as at the medium/upper stream of Muksu River).

**Etymology:** The subspecies is named after VICTOR I. KIPNIS (15.04.1923-11.08.2003), an amateur entomologist and a well known Russian collector.

### 2.3. *Paralasa jordana jordana* (STAUDINGER, 1982) (col. pl. 3: 9, 10, 11, 12, 13a, 13b, 14, 15, 16)

*Erebia Jordana* STAUDINGER, 1882, Berl. Ent. Z. **26** (1): 171-172. The syntypes are deposited in ZMHU (Berlin).

**Lectotype designation** (col. pl. 3: 14): For the stability of zoological nomenclature it is important to have the name-bearing type of *Erebia Jordana* STAUDINGER, 1882 fixed by a lectotype designation. We designate as a lectotype the ♂ syntype standing on the first position in the series with labels "Origin." and "Margelan Honr." It is preserved in the collection of ZMHU (Berlin). The lectotype is figured on col. pl. 3: 14 (upperside) and will be provided with a printed red label "Lectotype/*Erebia Jordana* STAUDINGER O., 1882 /S. CHURKIN & V. PLETNEV design., 2011". This butterfly is identical to the description having all characters mentioned there (see below). The locality "Margelan" means only the basic point of the expedition - it is situated in the Fergana valley where *Paralasa* butterflies are absent; the material was not even collected in Jordan but in the mountains southwards from Jordan - in Dugoba river valley. The two ♂♂ deposited in ZISP seem to be syntypes too: both have old labels typical for the material received directly from STAUDINGER (small square piece of paper with black borders): "Margelan/ Stgr.", one ♂ with an additional label "Колл.[екция] Вел.[икого] Князя Николая Михайловича [Coll. Grand Duke NIKOLAI MIKHAILOVICH]", the second with an additional label "Coll. Acad. Petrop."

The type series includes some specimens from West Ghissar which became the paralectotypes too, but actually they belong to another subspecies - *P. j. shachristana* (STSHTETKIN & STSHTETKIN).

**Material:** 14 ♂♂, 3 ♀♀, Alai, Kollektorsky range, Jordan v., Dugoba r., 2000 m, 18.-19.06.1995, SOCHIVKO A. leg.; 3 ♂♂, 1 ♀, same loc., 3.07.1995, 1700 m, SOCHIVKO A. leg.; 3 ♂♂, 1 ♀, same loc., 28.06.1995, S. CHURKIN leg.; 3 ♂♂, Jordan [same loc. as above - S. Ch.], 18.07.1989, V. TUZOV leg.; 20 ♂♂, 15 ♀♀, Alai, Aksu r. val., Kara-Shoro loc., 2400 m, 20-25.07.1995, S. CHURKIN, L. SALMANOVA & A. PETROV leg.

An important series is deposited in ZISP: several ♀♀ collected by AVINOV in North Alai, Archa-Bashi river, 20.06.1908; the altitude data are absent.

**Description and diagnosis:** The butterflies from the main valley of Aksu and from Dugoba r. have practically the same size which is more variable than it is usually: FW length is 23-26 mm (usually 24 mm) in the ♂♂ and 23-27 mm in the ♀♀ (but, as a rule, 24 mm, i.e. the ♀♀ often have the same size as the ♂♂).

♂: The common form represents a dark butterfly with yellowish band. Eye-spot usually normally developed and medium-sized. Androconium large and widely extends under the cell, but not widened and does not touch the postdiscal zone. The band looks small and triangular because its borders near the anal side are covered with dense reddish suffusion. As a result, the yellow colour never touches the anal vein and often even the cubital vein. Rarely, the deep reddish suffusion covers practically the whole band except a narrow area around the eye [but this area is never ring-shaped in contrast to *P. kusnezovi* (Av.)]. The black margin is wide, not less than 2 mm.

The HW upperside is fully darkened but not always: 35% of the ♂♂ from Aksu and 10-15% of the ♂♂ from Dugoba have a reddish spot. The latter is always dull, sometimes partly disappearing in the main ground colour; its borders are always not distinct. If the spot is large and well visible, the FW band is also large, wide and yellow without developed reddish suffusion - i.e. the colouration of such specimens is very similar to that of *P. j. roxane* (Gr.- Gr.). Inner margin with small, but distinct reddish part (i.e. the band extends to the inner margin).

FW underside double-coloured. HW underside with not dense grey suffusion, sometimes an unclear spot is developed externally of the postdiscal line.

♀: very dark, grey. Basal part of FW dark brownish (often with a specific greyish hue) with narrow reddish zone at the external border. The band is narrow and small compared to other taxa (similar to that of *P. k. bogutena* LUKHTANOV & LUKHTANOV); its main colour is yellowish with reddish suffusion at the borders, especially at the anal side. HW upperside practically always without red spot - even in the Aksu population. We have found only one ♀ (of bad quality) with a developed medium-sized reddish spot which was collected by the first author among hundred normal ♀♀. The HW underside is greyish, the grey suffusion is much more dense than in the ♂♂, the basal band is distinct but not contrasting.

**Distribution and variation, and status of the taxon:** The nominate subspecies inhabits only the basin of Aksu River with tributaries - Dugoba, Koksui, etc. The butterflies from Dugoba are the most darkened and certainly nonotypical, while the populations from the middle stream of Aksu include much more specimens with reddish band on the HW. It means that minimum of the hybridization with *roxane*-like butterflies is observed at the northern slopes of Kollektorsky range. Other populations have more

possibilities for a genetic exchange with the butterflies occupying the main Alai range - in this case this range must be populated by *roxane*-like butterflies [it logically agrees with the fact that *P. j. roxane* (GR.- GR.) populates Tengizbai Pass and the central part of North Alai macroslope].

In spite of the existence of numerous forms of  $\sigma\sigma$  with different degree of development of the HW reddish band, copulation between the taxon and *P. j. roxane* (GR.- GR.) does not seem to be easy. The  $\varphi\varphi$  are much more conservative, intermediate forms are nearly absent. Secondly, intermediate forms were found only in *jordana*-populations but not in *roxane*-populations. It means that the *roxane*-genotype is dominant, and it also means that the results of the hybridization are questionable. It is more logical to say that we have a case similar to the hybridization between *Parnassius apollonius* (EVERSMANN, 1847) and *P. honrathi* STAUDINGER, 1882 on Turkestan range where a lot of  $\sigma\sigma$  hybrids are known (which are not fertile) while hybrid  $\varphi\varphi$  are practically not known.

Thus, *P. j. jordana* (STGR.) must be separated from other taxa at a species level. However, we keep the subspecies status because this hypothesis needs further confirmation based on the material from new localities. It is possible, for example, that all lines of intermediate forms of  $\sigma\sigma$  and  $\varphi\varphi$  between the alpine *roxane*-populations and the lowland *jordana*-populations will be found higher in the Alai.

The situation westwards from the main areal of *P. j. jordana* (STGR.) is also not clarified. As we marked above, we have two  $\varphi\varphi$  with small, but distinct red HW spots, collected at Ak-Terek river, the western tributary of Sokh river [Matcha system, Turkestan Mts. (eastern edges), Ak-Terek r., Korgon v., 1800-2200 m, 29.-30.06.1999, A. PETROV leg.]. These  $\varphi\varphi$  are very different from the typical *P. j. jordana* STGR.  $\varphi\varphi$  and in all cases belong to the complex *kipnisi-roxane*. It can be included in *P. j. seravshana* LUKHTANOV - or belong to *P. j. kipnisi subspec. nov.* which penetrates the northern macroslopes of Matcha system as *P. roxane* (GR.-GR.) does in the central part of Alai. New material is needed.

More important, that 4  $\varphi\varphi$  with the labels "Archa-Bashi" river were found in ZISP. They were collected by AVINOV and all of them belong to *P. j. jordana* (STGR.), the features or tendency to any variant of *P. j. roxane* (GR.- GR.) colouration are absent as it was shown for the  $\varphi\varphi$  from Aksu basin. The mentioned material is not sufficient to make a final decision, but it is remarkable.

#### Summarizing, 3 versions are possible:

1. If true and full hybridization between *P. j. jordana* (STGR.) and *P. j. roxane* (GR.- GR.) is confirmed, the studied taxon represents a very old subspecies, the distribution area of which is decreasing now because of the "aggression" of younger subspecies from Alai Valley (and Surkhob valley). The true *P. j. jordana* (STGR.) characters are "drowning" in the forms with reddish HW, the distribution area of which encircles that of *P. j. jordana* (STGR.).
2. If the hybrids are represented only by the  $\sigma\sigma$  which are not fertile, *P. j. jordana* (STGR.) represents a young, but good species, endemic of a single river basin of North Alai.
3. *P. j. jordana* (STGR.) may represent bona species and includes two other subspecies distributed in Ghissar, while *P. j. roxane* (GR.- GR.) with related taxa represents another species the area of which has enlarged in the recent times. This variant seems to be the most logical according to the characters of the known taxa.

**Biology:** The altitudes are mainly not high (2000-2500 m a.s.l.; in 1995, the first author personally saw individuals flying at 1800 m), that is very important. Butterflies from the high altitudes of Dugoba or upper stream of Aksu are unknown - thus, even if this taxon might live at such altitudes the populations must be very local with very low density, i.e. not adapted for highland conditions.

**Etymology:** Toponymic name. Jordan (Iordan) - a small village just below Dugoba river, a place for entomological excursions well known from the old times.

2.4. *Paralasa jordana seravschana* LUKHTANOV, 1999 (col. pl. 3 : 25-28, col. pl. 4: 25 - holotype  $\sigma$ , 26 - paratype  $\varphi$ )  
Atalanta **30** (1/4): 141.

TL: Tadjikistan, 60 km E Aini, Seravshan Range, Dascht.

Material: 2  $\sigma\sigma$ , 2  $\varphi\varphi$ , Turkestan Mts., Kyrgyzstan, Batken region, Karavschin r., Dzheptyk, 2400 m, 5.08.2009, A. SOCHIVKO leg.; 1  $\varphi$ , Turkestan range, Vorukh, Nurlou r., 2800 m, 19.07.1988, ALEXANDROV A. leg.; 1  $\varphi$ , Turkestan range (eastern part), Oburda pass, 3100 m, LUKHTANOV V. leg.

Thanks to the courtesy of V. LUKHTANOV, we have studied the photos of the type series from Dascht; the photo of the holotype is published in this paper for the first time.

Description and diagnosis: FW length 23-27 mm according to the original description. Material from Turkestan range: FW length 23-24 mm in the  $\sigma\sigma$  and  $\varphi\varphi$ .

$\sigma$ : Androconium large and dark, eye-spot usually medium-sized, FW band yellowish, veins are not darkened in contrast to *P. j. kipnisi subspec. nov.*, but cubital and anal sections of the FW band are reduced in size [rare exceptions have the FW similar to *P. j. shachristana* (STSHETKIN & STSHETKIN) or nominate subspecies].

HW upperside with the main subspecific character: small and dull reddish postdiscal spot situated between M-veins and Cu-vein (as a rule). This spot is not contrasting and has no distinct borders, sometimes (rarely) it becomes disappearing in the ground colour, so that it is possible to see it under a special angle of vision. In opposite cases, the spot is enlarged, becoming similar to that of *P. j. roxane* (GR.- GR.) (worth to note, that the distribution areas of these two taxa are not connected), even with slightly developed light-yellowish suffusion.

FW underside double-coloured; HW underside with comparatively well developed grey suffusion and distinct postdiscal line.

$\varphi$ : Similar to the  $\sigma$ , with typical for the group sexual dimorphism, larger eye-spot and paler underside. FW band comparatively small and narrow, not touching the cell.

**Distribution and variation:** The eye-spot is sometimes enlarged, but sometimes becomes smaller and even loses the white pupil. The first variant is correlated with enlarged FW band with reduced reddish suffusion - these specimens are similar to *P. j. shachristana* (STSHETKIN & STSHETKIN). Rarely, the  $\sigma\sigma$  have conspicuous dense and extensive reddish suffusion developed in the anal part of the FW band - as it is known for *P. j. jordana* (STGR.). The development of the reddish HW band seems to be less among the  $\varphi\varphi$ .

The butterflies from Turkestan range are very similar to the nominotypical ones, but seem statistically darker.

In general, the characters look intermediate between two forms: *P. j. shachristana* (STSHETKIN & STSHETKIN), described from the



western part of Seravshansky range and *P. j. jordana* (STGR.). More or less developed reddish HW spots might confirm the hybridization with *P. j. kipnisi subspec. nov.* but it needs confirmation.

**Biology:** The type series was collected at the altitudes 2100-2600 m a.s.l., obviously less than it is common for the *roxane-kipnisi* line, but similar to the altitudes of the dark *P. j. jordana* (STGR.).

**Etymology:** Toponymic name, not good in this case because the neighbouring taxon was also described from Seravshan Mts.

## 2.5. *Paralasa jordana shachristana* (STSHETKIN & STSHETKIN, 1991) (col. pl. 4 : 1-4)

*Erebia jordana shachristana* STSHETKIN JU. L. & JU. JU. STSHETKIN, 1991, Dokl. Akad. Nauk Tadzh. SSR 34(1):65.

The types are deposited in ZISP.

NOTE. The type series consists of two old series - one (including the holotype) was collected by A. GOLBECK in Seravshansky range (the types are deposited in ZISP) and the other was collected by A. GOLBECK in Kyrgyzsky range (Alamedin river). The paratypes from Kyrgyzstan definitely belong to the dark *P. k. kolesnichenkoi* CHURKIN & ZHDANKO (see above); it will not be possible to use these paratypes for the lectotype designation in the case if the holotype is lost (we have not found it in the collection).

The type series of *P. j. jordana* (STGR.) included specimens from the western edges of Seravshansky range ("Hazret-Sultan"). These wrong syntypes (now paralectotypes) of the nominate taxon must belong to *P. j. shachristana* (STSHETKIN & STSHETKIN), but unfortunately have not been examined by the authors of the paper.

TL: Seravshansky (Zeravshansky) Range, Voru vic. (Voru village is situated at the NW edges of Fanskie Mts., the mountains standing between Seravshansky and Ghissarsky ranges).

Material: 12 ♂♂, 7 ♀♀, Tadjikistan, West Ghissar, Seravshansky range, Fanskie Mts., Urech r., Artuch camp, 2200-2400 m, 6.-14.07.1998, V. VASILCHENKO leg.; 8 ♂♂, 3 ♀♀, Ghissarsky range, Shing r., Khasor-Chashma lake, 2800 m, 20.-30 July 1993, S. CHURKIN leg.

**Description and diagnosis:** FW length 23,5-24,5 mm (22-25 mm) in the ♂♂ and 23-27 mm in the ♀♀.

♂: Similar to *P. k. helios* (O. BANG-HAAS), but the ♂♂ in general are square-shaped. The androconium is enlarged, FW band is yellow with orange hue, narrow in the anal part, reddish suffusion is reduced and sometimes only slightly visible in the postdiscal zone at the external border of the androconium. The eye-spot is medium-sized, not reduced and always has developed white pupil. HW upperside fully darkened. FW underside double-coloured. HW underside with conspicuous, but usually not dense grey suffusion, postdiscal band distinct, but not so contrasting.

♀: The basal part of FW is brownish-dark, but the external part of this basal band is clearly reddish [more similar to *P. j. roxane* (Gr.- Gr.) than to *P. k. helios* (O. BANG-HAAS), the latter having only narrow traces of the reddish colour]. The eye-spot is larger, the band is clearly yellow-orange, the veins are not contrasting. The reddish suffusion is reduced, as a rule (but not always, some ♀♀ have it well developed in the anal part of the band). Other characters as in the ♂♂, only the HW underside is usually with more dense grey suffusion. FW underside with the same character as *P. k. helios* (O. BANG-HAAS): the reddish basal part is suffused by yellowish scales - so, that the differences between the red and yellow parts are not so sharp and the underside is not contrasting as a whole.

**Distribution and variation:** The known distribution area covers only West Ghissar in the zoogeographical sense: the western part of Seravshansky range, Fanskie Mts. and the northern slopes of the neighbouring Ghissarsky range. All material which we have seen from this region is very uniform. Unfortunately, there are no specimens from the western part of Turkestansky range - they must be similar to the nominotypical populations because small series from the eastern Turkestan look like hybrids between the *roxane*-like and *shachristana*-like individuals (see previous description).

**Biology:** Flies mainly not very high. S. CHURKIN has not seen it higher than 3000 m in the Shing river basin where it was not local between the altitudes 2000 m and 3000 m a.s.l.

**Etymology:** Toponymic name in this case - Shakhristan is the name of a district, part of former Leninabad region (Tadjikistan) which included western Seravshan.

## 2.6. *Paralasa jordana summa* (AVINOV, 1910) (col. pl. 4: 5-8, 27- lectotype, 28 paralectotype ♀)

*Erebia manni* NIC. var. *summa* AVINOV, 1910, Horae Soc. Ent. Ross. 39: 236-237, Tab. 14: 10. Syntypes in ZISP.

**Lectotype ♂ designation** (col. pl. 4: 27): To preserve the stability of zoological nomenclature, and to avoid further possible mistakes, a syntype ♂ of *Erebia manni* NIC. var. *summa* AVINOV, 1910 is designated as the lectotype. The specimen is deposited in ZISP and has the following labels: "Pamir orient./Alitshur VII.08./A. AVINOFF [leg.]" and "к. [оллекция] Авинова" (coll. AVINOV). The selected specimen is figured in the colour plate published with the original description. The lectotype will be provided with a printed red label "Lectotype/*Erebia manni* NIC. var. *summa* AVINOV, 1910/S. CHURKIN & V. PLETNEV design., 2011".

Two more syntypes were found in ZISP: 1 ♀ with the same labels as the lectotype with hardly damaged left HW and 1 ♂ (better condition than the lectotype and with even more typical colouration) with the labels "Аличур" (Alichur, handwritten by AVINOV) and "к. [оллекция] Авинова" (coll. AVINOV). The second label has a handwritten inscription "*summa* AVIN. (тип)" (*summa* AVINOV, type) - this is surely the hand of SHCHETKIN who wrote in his paper that 3 syntypes were found and one of them was similar to the figure while the other ♂ was even better, but was not truly marked as a syntype (SHCHETKIN & SHCHETKIN, 1991: 63-64). Both former syntypes will be provided with the paralectotype labels (the specimen marked as "type" was not the valid lectotype designation according to the article 74.5 of ICZN).

NOTE. TSHIKOLOVETS marked that he found 4 syntypes, but we found only 3 as it was published by SHCHETKIN & SHCHETKIN.

TL: Alichur ("Alitshur"), East Pamirs, Tadjikistan (app. 37° 44' N, 73° 32' E).

Material: 4 ♂♂, 1 ♀, East Pamirs, Chakabai Mts., Shahasai r., 27.07.2000, A. IRTLACH leg.; 6 ♂♂, 2 ♀♀, East Pamirs, 40 km SW Murgab, 28.07.2000, NEFOROSNYI V. leg.; 1 ♂, 1 ♀, E. Pamirs, 28 km SE Murgab, 4200 m, 20.07.2005, A. ZHDANKO leg.; 2 ♂♂, 3 ♀♀, East Pamirs, Murgab distr., Karasu r., 4300 m, 2.08.1991, S. DIALECTOV & D. ZAMOLODCHIKOV leg.; 1 ♂, 1 ♀, East Pamirs, 50 km NE Murgab (certainly, a mistake and the specimens belong to the first series in this list - CH. & PL.), 15.-18.07.2000 (bought from an

internet dealer); 1 ♂, East Pamirs, Chechekty, 4200 m, 15.07.2001; 1 ♀, Pamirs, Dzhilandy, 4500 m, 19.07.1988, SOKOLOV B. leg.

**Description and diagnosis:** FW length usually 22 mm (21-23 mm) in the ♂♂ and 23-24,5 in the ♀♀.

♂: A small and dark butterfly. The androconium is very large, two thirds of FW are darkened, the blackish androconial area covers the postdiscal zone (in other taxa of the complex the inner border of the band situated externally from the cell is covered by reddish suffusion or main band colour; in this case it is fully dark). The FW band is very narrow, yellowish, red suffusion is visible only in the anal part, as a rule. The eye-spot is normally developed, with distinct white pupil. Fringes mainly darkened with not bright and short whitish parts mainly in the costal part of the FW.

The HW upperside with small postdiscal reddish spot; sometimes it has a distinct border and is covered by more or less clear whitish or even yellowish suffusion (the veins are darkened in this case), but sometimes it is dull and not contrasting (very similar to that of *P. j. seravschana* LUKHTANOV). FW underside double-coloured. The basal darkened area situated under the cell is large and blackish scales partly cover the basal part of the cell. The HW underside is darkened with not dense grey suffusion, but with conspicuously darker basal part. The row of whitish spots is developed, but not contrasting or enlarged.

♀♀: The main characters are as in the ♂♂, with typical sexual dimorphism. Basal part of FW very dark, band mainly yellow, reddish suffusion developed in the anal part, but one more small reddish spot is present externally from the cell (this zone is totally darkened in the ♂♂); FW fringes often lighter than in the ♂♂ being mainly whitish, especially in the costal part.

HW reddish spot small and sometimes very dull, but sometimes very contrasting and with dense yellow suffusion - so that it looks like a yellow band with reddish suffusion at the borders and darkened veins. In this case the HW underside is similar to *P. ida* (Gr.-Gr.), too (having developed and even yellowish spot situated externally from the basal band).

**Distribution and variation, status of the taxon:** The material at our disposal is not sufficient. The series examined originate only from the Murgab area. The available ♂♂ of *P. j. summa* (Av.) are uniform, while the ♀♀ present a line of variability: some of them are similar to the ♂♂, while other recall *P. ida ishkashima* (STSHETKIN & STSHETKIN). The latter has only more reduced reddish suffusion of the FW band and slightly lighter and larger yellowish HW band. The ♂♂ of the two taxa can be easily separated by the colour of the fringes - totally whitish in *P. ida ishkashima* (STSHETKIN & STSHETKIN) and mainly darkened in the ♂♂ of *P. j. summa* (Av.). Unfortunately, the ♀♀ of *P. j. summa* (Av.) have much more whitish fringes and do not differ from the *P. ida* (Gr.-Gr.) ♀♀ so sharply. This problem does not seem to be so simple. *P. ida* (Gr.-Gr.) was described as a subspecies of *P. jordana* (STGR.), and during long time *P. ida ishkashima* (STSHETKIN & STSHETKIN) has been known under the name “*summa*”. The authors of the latter were the first who studied the types of *P. j. summa* (Av.). They found the mistake and described “*ishkashima*”, but as a separate species with the remark: “The absence of intermediate forms between the new species [*ishkashima* - S. CH.], *E. summa* and *E. ida*..., cohabitation at the borders of the distribution areas provide the base to treat all 3 taxa as bona species” (STSHETKIN & STSHETKIN, 1991: 64). The dividing of two *ida*-taxa is surely wrong - and, thus, it is impossible to accept the information about the cohabitation as a confirmed fact. Other scientists quickly lowered the status of *ishkashima* (STSHETKIN & STSHETKIN) to subspecies, but the status of *summa* Av. was not changed - that is not logical because both of them were established in one way by the same authors.

Three variants are possible for the taxon in study. It can be a species, a subspecies of *P. jordana* STGR. (as we suppose) or a subspecies of *P. ida* (Gr.-Gr.).

Within *P. jordana* (STGR.), this taxon is related to the *roxane-kipnisi*-group, especially recalling small specimens of *P. j. kipnisi subspec. nov.* from Muksu River. We can not exclude that this butterfly came to Pamirs from Muksu but not from East Transalai (Kyzyl-Art Pass) - it seems logical according to the distinctions of the taxa. However, material from North-East Pamirs is totally absent: there are no *Paralasa* records from the territory between the Muksu basin and Karakul Lake. If the representatives of the *jordana*-complex do not populate North-East Pamirs, it is logical to suppose that the distribution areas of other *jordana*-subspecies and “*summa*” were widely separated deeply in the past. In this case the latter taxon represents a separate species or keeps the genetic exchange with southern subspecies of *P. ida* (Gr.-Gr.). The last question could be easily clarified if the cohabitation can be proved.

We examined one broken ♀ collected by P. BEDA and preserved in his private collection with the label “Pamirs, Shakhdarjinsky range, Roshtkala, Bidiz v., Shakhdara r. valley, 3600 m, 1.08.1881”, which looks very similar to *P. j. summa* (Av.), but with fully reduced red HW spot. Thus, this ♀ recalls a typical ♀ of *P. j. jordana* (STGR.) but with darkened veins and narrow band. The locality is well known for *P. ida ishkashima* (STSHETKIN & STSHETKIN), and a series of this taxon was collected by P. BEDA in the same expedition, but in another place and biotope. The *ida*-population from Dzhilandy also includes some specimens (usually ♀♀!) which look similar to *P. j. summa* (Av.) ♀♀ with reduced HW spots and more developed reddish colour - their status is also obscure.

TSHIKOLOVETS (2004) includes Vakhan range into the areal of this taxon, but the butterflies from there were not figured; it needs confirmation. CHURKIN collected some *ida*-like specimens on Vakhan range, but this material was lost and former identification may be wrong because of the marked similarity of the two taxa.

**Biology:** Typical for the species; altitudes were stated as 3800 to 4300 m a.s.l. by different authors who worked in the East Pamirs.

**Etymology:** Summa (Lat.) - perfection, highest point, highest position.

## 2.7. *Paralasa jordana k h r a m o v i subspec. nov.* (col. pl. 4: 9 -holotype, 10, 11, 12)

Holotype ♂ (col. pl. 4: 9), Kyrgyzstan, North Alai, Kichik-Alai range, Ak-Bura r., 2500-2800 m, 28.06.2009, S. CHURKIN leg. Paratypes: 2 ♂♂, same data, B. KHRAMOV leg.; 4 ♂♂, Kyrgyzstan, North Alai, Kichik-Alai range, Ak-Bura r., Kyzyl-Tala loc., 2600-2800 m, 28.-29.2008, S. CHURKIN, V. PLETNEV, S. SALUK leg.; 2 ♂♂, North Alai, Ak-Bura river, 1800-2200 m, 30.06.2009, B. KHRAMOV leg.; 29 ♂♂, 12 ♀♀, Kyrgyzstan, North Alai, Ak-Bura river, 1800-2200 m, 1.-3.07.2011, S. CHURKIN & V. PLETNEV leg.

**Description and diagnosis:** ♂: FW length 22 mm in the holotype, 21-23 mm in the paratypes. A small butterfly, obviously smaller than the neighbouring taxa. The FW band is bright yellow with orange-gold hue, distinctively not the same as in other taxa. The borders of the band are contrasting, the FW reddish suffusion is only slightly developed and sometimes practically absent. The androconium is large and extends under the cell towards the anal vein, but is not widened here - so that the band is practically not narrowed and extends towards the base in the anal zone (exactly this zone is sometimes reddish). The veins are not darkened. The eye-spot is medium-sized, with normally developed white pupil. The blackish margin is wide with distinct border. The inner margin is widely yellowish. The fringes are usually relatively contrasting (less than in *P. j. kipnisi subspec. nov.*, but more than it is usual for the complex).

HW upperside with a long (up to Cu2 vein) yellowish band with contrasting external border and unclear inner border. The colour of the band is the same as on the FW, but with reddish suffusion (more or less developed) along the inner border. This band is widened and covers the external part of the cell - in all other taxa of the complex the HW band never extends to the cell.

FW underside is unusual for the complex - it looks relatively uniform because the reddish colour in the basal part is reduced and changed to greyish-yellow. However, rarely the basal part is darkened and the FW underside is more or less double-coloured.

HW underside with dense grey suffusion and contrasting basal band, because a yellowish-grey spot is developed externally from the postdiscal line. This spot is usually not dense and has unclear margins, but covers the postdiscal zone up to the row of whitish dots. It recalls some variants of the colouration of *P. ida* (GR.-GR.); only some rare specimens of *P. j. kipnisi* **subspec. nov.** from the upper stream of Muksu have this spot distinct, but not so dense and large. Sometimes this yellow spot is contrasting and large, separated to several spots by dark-greyish veins. The series of whitish spots is normally developed.

♀: FW length 23-25 mm (usually 23,5 mm). All main characters as in the ♂♂, wings are wider as well as other sexual differences are developed. The reddish suffusion is more distinct than in the ♂♂, the ground colour is bright yellow. The base of the FW is darkened, the external half of the cell is yellow with reddish suffusion [in contrast to *P. j. roxane* (GR.-GR.) which has whitish band and mainly darkened cell]. The HW band is smaller than in the ♂♂, the cell is sometimes totally darkened. The FW underside is yellowish, the HW underside with a yellowish spot as in the ♂♂.

**Distribution and variation:** Known only from the Ak-Bura river basin - i.e. the distribution area is situated between the areas of *P. kusnezovi alajense* KORB (less than 20 km to the known populations of this taxon in Gulcha river valley) and *P. j. roxane* (GR.-GR.) (Isfaramsai r.). The variability is not great, the butterflies are rather uniform. The flight period is definitely one week (at least) earlier than *P. k. alajense* KORB, in spite of the fact that the new taxon lives mainly much higher.

**Diagnosis and status:** Easily distinguished from all known taxa by bright yellow colour of the HW band which covers the external part of the cell. Both characters are absent in the complex as a whole. Some smaller characters of the colouration of the upperside and underside are also unusual. Genetic exchange with *P. kusnezovi* (Av.) is absent, even traces of hybridization are not observed.

The new subspecies looks related to *P. j. roxane* (GR.-GR.), but actual hybrids are also not known. The representatives of *P. j. roxane* (GR.-GR.) from North Alai have HW reddish band more often suffused by yellowish-whitish scales than it is in the nominotypical Transalaian populations - but the size is sharply different, the HW cell is never included in the band, the details of the colouration of the FW cell and post-cell zone are always different. The ♀♀ of these two taxa never can be confused. Thus, the species status is uncertain. So we prefer to receive more material. Worth to note that no differences in the genitalia between these 3 neighbouring taxa, which may belong to 2 or even to 3 species (*kusnezovi-khramovi-roxane*), were found.

**Biology:** Typical for the complex. According to the observations, the altitudes are from 2000 up to 3000 m a.s.l. Not found above 3000 m on the main ridge of Alai. Flies together with *Paralasa ali* CHURKIN and *Parnassius charltonius sochivkoi* CHURKIN. Very local.

**Etymology:** The subspecies is named after BORIS A. KHRAMOV (St.-Petersburg), an amateur entomologist and our friend, who participated in the field studies on *Paralasa* and helped us during the work.

### 3. *Paralasa icelos* (GRUM-GRSHIMAILO, 1890) (col. pl. 4: 13-16)

[*Erebia Jordana* STGR.] var. *Iceos* GRUM-GRSHIMAILO, 1890, Mémoires sur les Lépidoptères. 4: 452, Pl. 13: 4b, 4 c.

TL: South Ghissar, Baisuntau range, Liagar-Mourda pass. The holotype, by monotypy, is deposited in the British Museum (RILEY & GABRIEL, 1924: 26).

Material: 11 ♂♂, 3 ♀♀, Ghissar range, Kondara, 1900 m, 24.05.2000, YU.YU. STSHETKIN leg.; 5 ♂♂, Ghissar range, Karatag r., Zorgo Mt., 1900-2200 m, 16.07.2003, PEREPECHAENKO leg.; 4 ♂♂, 1 ♀, Tadjikistan, Ghissar Mts. (south-east border), Sorbo r., 2200 m, 12.-25.06.2011, V. TREMASOV leg.; 2 ♀♀, Ghissarsky-Seravshansky range, lower stream of Pasrud r., 2100 and 2600 m, Shurmashk v., 9. and 17.07.1986, G. SAMODUROV leg.

**Description and diagnosis:** FW length 22-23 mm in the ♂♂ and 24-25 mm in the ♀♀ - the size is not variable and less than in the neighbouring taxa of the complex.

♂: A dark butterfly with contrasting fringes and very large androconium; the dark area extends distally from the cell as well as towards the anal vein. The band is small and narrow, reddish from the anal side to Cu2 vein (as a rule), so that only a small area around the eye-spot is orange-yellow. Rarely the whole band is orange-yellowish with the reddish suffusion reduced. In all cases the veins are darkened, forming two more or less separate spots under the costal part of the band. HW upperside dark. The eye-spot is medium-sized in the Kondara population but some specimens from Karatag have reduced eye, even the white pupil is not well visible.

FW underside similar to the upperside. HW underside dark with not dense greyish suffusion, whitish dots distinct, basal band visible but not contrasting.

♀: All main characters as in the ♂♂, sexual dimorphism is less developed than in other taxa. The FW band is wider and brighter, but very small and reduced (and with visible dark veins) compared to all other taxa. HW upperside always totally darkened. HW underside only slightly more greyish.

**Distribution and variation:** Known only from the southern slopes of Ghissar range and the neighbouring mountains of South Ghissar zoogeographical district. The material from the type locality is very rare in collections (for example, specimens collected by V. TUZOV in Machai valley, Baisuntau); possible cline of characters is not observed.

Two ♀♀ which were collected by G. SAMODUROV extended the distribution area to the northern slopes of Ghissar. The locality (Shurmashk village) is situated at the eastern border of Fanskies Mts.; the Pasrud river valley belongs mainly to the northern Ghissar. It is very close to the known localities of *P. j. shachristana* (STSHETKIN & STSHETKIN) in Fanskies Mts. No doubt that the *P. icelos* (GR.-GR.) populations penetrate North Ghissar using Anzob valley (upper stream of Karatag is much higher and colder). It means that the distribution area of *P. icelos* (GR.-GR.) partly breaks the united area of the *shachristana-seravshana* group from the upper stream of Seravshansky range to its western edges. Thus, we can suppose that the populations of *P. icelos* (GR.-GR.) and *P. jordana* (STGR.) will be found practically together, or the *P. j. shachristana* (STSHETKIN & STSHETKIN) populations are separated from other *P. jordana*-taxa by the area of *P. icelos* (GR.-GR.). The last version seems to be doubtful, but only field work will provide real decision.



NOTE. The species status was stated by STSHETKIN & STSHETKIN (1991), but actual distinctions were not given. The same is true for later publications. However, the species status is logical because intermediate forms with neighbouring taxa are unknown. The distribution area of the species is adjacent to the area of *P. j. kipnisi* **subspec. nov.** (somewhere eastwards on Karategin range) and to *P. j. shachristana* (STSHETKIN & STSHETKIN) in the north. Both taxa represent forms very different from *P. icelos* (Gr.-Gr.), the latter recalling the darkest representatives of the complex like the nominate *P. jordana* (STGR.) or *P. k. issykkuli* LUKHTANOV. However, the distribution areas of all taxa are parapatric; sympatry has never been actually confirmed.

**Biology:** According to the labels of the material examined, this species prefers medium altitudes (the main series was collected by JU. JU. STSHETKIN), while according to the old JU. JU. STSHETKIN's paper the main altitudes are very high - from 2900 to 3200 m a.s.l. We cannot comment this contradiction. The habitats are typical - rocks and steep stony slopes.

**Etymology:** Icelos (Greek) - the God of dreams.

## Discussion

The main taxonomic problem of the complex is the absence of simple specific distinctions. It does not seem possible to divide all *P. jordana*-taxa and *P. kusnezovi*-taxa basing on one or two simple characters. Moreover, even in the cases when the absence of hybridization is undoubted (*P. j. khramovi* **subspec. nov.** and *P. k. alajense* KORB), the cohabitation is unknown. Of course, cohabitation is possible, but in all cases it will be an uncommon phenomenon, and true distribution is parapatric. Thus, the obvious sharp differences between the two above mentioned taxa without any traces of hybridization is a confirmation that we deal with two different species. Basing on this fact, it will be possible to find some distinctions in the genitalia, but we were unable to do that.

### A. Subspecific structure of *Paralasa kusnezovi* (AVINOV, 1910)

*Paralasa kusnezovi* (Av.) consists of 3 very different groups of subspecies, and each group can be treated as a semispecies (sensu CHURKIN, 2012 - *Plebeius*). Each group has very serious distinctions, especially in the zoogeographical centre of the distribution area, but distinct clines of characters were observed in the areas of contact. These clines are never opposite in different "semispecies", as well as some populations undoubtedly have hybrid origin and are too much heterogeneous.

For example, such a hybrid population was found between the distribution areas of *P. k. kusnezovi* (Av.) and *P. k. kolesnichenkoi* CHURKIN & ZHDANKO. Moreover, we have an additional confirmation that the genetic exchange is continuing and productive: the cline of the FW band colour. The nominotypical population of *P. kusnezovi* (Av.) does not have so deep and dense chestnut-red colour compared to the western specimens and especially to the most western subspecies of the *kusnezovi*-group - *P. k. talastauana* LUKHTANOV. This is logical because the eastern *kusnezovi*-populations have a permanent transfer of the yellow-genes from the neighbouring *P. k. kolesnichenkoi* CHURKIN & ZHDANKO.

The other hybrids are known between the last taxon and *P. k. issykkuli* LUKHTANOV (specimens from Kyrgyzsky Mts.), but the east-south way of possible connection is not explored (and may be broken). Some intermediate populations could be found in the future (at SE Dzhungal range or western edges of Kara-Katty) because *issykkuli*-like butterflies were found at Moldo-Too and even at Baibichee-Too. However, the genetic exchange between *P. k. kolesnichenkoi* CHURKIN & ZHDANKO and *P. k. issykkuli* LUKHTANOV in all cases is difficult, because the altitudes and flight periods of the taxa are too different while the watershed (Kyzart Pass) between the areas of these taxa is too green and wet.

At the same time, the northern way for contacts between these subspecies is open and does not seem so difficult: the cline of the colouration in Kyrgyzsky range confirms it, while the altitudes and flight periods become nearly identical on the way from Alamedin river to Boom valley. The problem is that this northern way of genetic exchange is broken now - the *kolesnichenkoi*-populations from Suusamyr valley are practically isolated from those inhabiting the northern slopes of Kyrgyzsky range (the range is too high, the southern slopes too wet, the *Paralasa*-butterflies are absent or very rare here nowadays). All these facts confirm the comparative isolation of the *issykkuli-bogutena*-group, but the species status seems very questionable.

The inner structure of the species with short remarks is as follows.

#### 1. The *kusnezovi*-group of subspecies

FW band chestnut-reddish. Underside dark (especially in the ♂♂).

***Paralasa kusnezovi kusnezovi*** (AVINOV, 1910)

A large butterfly with reddish FW colour, the androconium is narrow, the yellow colour of the band is reduced, underside very dark. Inhabits the main part of West Tian-Shan. The territory between Chatkal range and Suusamyr range is populated by hybrid red-yellow populations.

***Paralasa kusnezovi talastauana*** LUKHTANOV, 1999

A smaller subspecies with very deep red FW colour and very contrasting FW as a whole, the androconium is very large. A clinal subspecies, the true distribution area covers only the western part of Talass Alatau. Rare and local.

Note: unknown from the western half of Kyrgyzsky Alatau.

***Paralasa kusnezovi bosbutaensis* **subspec. nov.****

The darkest variant with reduced FW band and darkened veins. Fringes contrasting. The distribution area is limited by the slopes of Bosbu-Too range and partly isolated from those of all other taxa.

#### 2. The *kolesnichenkoi*-group of subspecies

FW with more or less wide yellow band. Underside with developed grey suffusion. We use the name "*kolesnichenkoi*" because this division (group of subspecies) is not under ICZN rules while this subspecies is the most important.

***Paralasa kusnezovi kolesnichenkoi*** CHURKIN & ZHDANKO, 2001

A large butterfly with narrow androconium but orange-yellow FW band, populating the basin of Kekemeren river. The full distribution area includes part of the northern Kyrgyzsky Range in the north, Dhumgal river basin in the east, Moldo-Too and other ranges northward from Naryn Valley and the northern half of Fergansky range. Except Suusamyr, other ranges are populated by smaller butterflies with slightly enlarged androconium and slightly darkened ♀♀. It is possible to treat the dark *kolesnichenkoi* specimens as a different subspecies, but the distribution area would be mosaic in this case. The simple distinction for all known populations of the subspecies is the reddish basal part of the FW in the ♀♀.

Theoretically, the butterflies from Kyrgyzsky Mts. (from Merke r. to Alamedin r.) could be described separately (basing on the available specimens it makes no sense as the material is insufficient).

***Paralasa kusnezovi alajense* KORB, 2004**

A clinal subspecies (*P. k. talastauana* LUKHTANOV). Androconium considerably enlarged, ♀♀ with partly brownish base of the FW and narrowed anal part of the FW band. The distribution area covers East Alai and the southern part of Naryn Valley.

***Paralasa kusnezovi helios* (O. BANG-HAAS, 1927)**

The androconium is large, the band colour is bright yellow, the eye-spot is reduced. Known from Chinese Aksu, but very probably inhabits all southern slopes of Tian-Shan.

**3. The *bogutena*-group of subspecies**

FW with reddish, but narrow and small band. ♀♀ with widely darkened basal parts of the FW. Obviously prefers not so high altitudes and flies very early.

***Paralasa kusnezovi bogutena* LUKHTANOV, & LUKHTANOV, 1994**

Eye-spot usually without white pupil. FW band deeply reddish. Northern slopes of the eastern part of Zailiysky Alatau in Kazakhstan.

***Paralasa kusnezovi issykkuli* LUKHTANOV, 1999**

FW band mainly reddish, but yellow colour is not so reduced, eye-spot normally developed. The distribution area includes the shores of Issyk-Kul Lake (including Orto-Takoi water reserve) and the mountains bordering Boom Valley. The butterflies from the western part of Zailiysky Alatau may belong to this subspecies.

The butterflies from Boom have upperside colouration more contrasting, FW is angled; however, these distinctions are clinal.

**Zoogeographical notes:** The distribution of different subspecies of *P. kusnezovi* (Av.) provides very important information about the zoogeographical structure of Tian-Shan. The subspecies-pattern is well correlated with the zoogeographical division changed and corrected by the biological characteristics of species. West Tian-Shan as usually divided into two parts (not divided abruptly and deeply). The Suusamyra fauna is not identical to the fauna of Naryn Valley, the western part of the so-called Inner Tian-Shan is faunistically very different from the eastern part of it (as it is known for many species groups). The fauna of the shores of Issyk-Kul Lake (western parts) is closely related to that of Boom Valley.

Two facts are most important:

1. The fauna of North-East Alai (including Gulcha river) is closely related to the Tian-Shanian fauna and differs well from the fauna of Central and West Alai. East Alai is the part of Tian-Shan, except the alpine species, where the distribution is opposite: the south-eastern part of "Inner Tian-Shan" is populated by the Ghissar-Alai fauna.
2. The Suusamyra fauna penetrates the northern slopes of Kyrgyzsky Mts. This process began not so far in the past (we suppose that it was during the last interglacial period), but had very important consequences: the simple and long-time continuing relations along the western and the northern borders of Tian-Shan were broken. The results of the process were found and noted many times - for example, for some *Erebia* species (CHURKIN, 2002). The study of *Paralasa* presents undoubted confirmation of this hypothesis which seems very valuable: many faunistic facts which had no explanation or looked strange can be clarified.

**B. Subspecific structure of *Paralasa jordana* (STAUDINGER, 1982)**

The hiatuses between the Ghissar-Alai taxa of the *jordana*-group are definitely deeper than in *P. kusnezovi* (Av.). Besides of it, the authors had no possibility to spend so much time for the western races of the complex as they did for the eastern ones. As a result, the status of many taxa in the *jordana*-group is obscure.

The distribution areas of *P. kusnezovi* (Av.) and *P. jordana* (STGR.) come into contact in the northern Alai, where the dark *P. k. alajense* KORB flies very close to the yellow *P. j. khramovi* **subspec. nov.** The differences between these two taxa are so deep and sharp that the species status seems to be undoubted.

However, true intermediate forms are unknown between some other taxa. In the *jordana*-case, a lot of "intermediate" ♂♂ are known but hybrid ♀♀ are very rare (practically absent). It is very possible that true hybrid populations will be found later as it was done for the Tian-Shanian populations. However, the opposite hypothesis is not excluded, and the *jordana*-group should be divided into several species. We are not doing this, preferring to keep the conservative version without true confirmation of the status of individual taxa.

It is not possible to exclude forever the version uniting all "dark" subspecies under the name "*jordana*" (including all "*kusnezovi*"). In this case the *jordana*-like butterflies must be distributed at low altitudes of the whole North Alai (from Gulcha to Dugoba), while the representatives of another species - *P. roxane* (GR.-GR.) (including *P. j. khramovi* **subspec. nov.**) occupy higher biotopes. This hypothesis is attractive because it is very simple. However, all known facts oppose it. Moreover, it is nearly impossible to believe that lowland butterflies distributed over all north Alai were collected only near Jordan during 150 years of study. We had tried many times to find low *jordana*-populations, without any success, while even the altitudes known for North Alai populations of *P. j. roxane* (GR.-GR.) and *P. j. khramovi* **subspec. nov.** are really low (2000 - 2200 m a.s.l.). Thus, we have to study much more difficult version with long and interesting natural history of the species complex.

We united the nominate subspecies with two Ghissarian taxa, but if *P. j. jordana* (STGR.) represents a bona species, both *P. j. seravschana* LUKHTANOV and *P. jordana shachristana* (STSHETKIN & STSHETKIN) should be placed together with *P. j. roxane* (GR.-GR.).

**1. The *roxane*-group of subspecies**

HW upperside with well developed reddish or yellowish spot. Prefer high altitudes. ♀♀ with only partly darkened FW bases.

***Paralasa jordana roxane* (GRUM-GRSHIMAILO, 1887)**

A large butterfly with partly enlarged androconium, HW upperside with not contrasting reddish band. Inhabits the mountain slopes bordering Alai valley and penetrates North Alai where it flies in Isfaramsai valley. Very probable that this taxon populates practically all highlands of North Alai because the dark *P. j. jordana* (STGR.) prefers low altitudes. The butterflies from Isfaramsai more often have slight yellowish suffusion on the HW band; this may represent a result of the hybridization with *P. j. khramovi* **subspec. nov.**, but other signs of the genetic exchange are absent while the total distance is very short to suppose a long line of small changes (i.e. the results of the genetic exchange must be obvious in all Alaiian populations). In addition, the size of Alaiian representatives is bigger than the nominate subspecies - while *P. j. khramovi* **subspec. nov.** is characterized by a smaller size. Forms without reddish HW band are not found in all known populations - i.e. exactly this taxon is dominant and "aggressive".

***Paralasa jordana kipnisi* **subspec. nov.****

A dark version of the previous taxon with some unusual features: FW with dark and enlarged androconium, band with distinctly darkened veins, HW band is smaller, narrow but with distinctly contrasting borders. The distribution area is very large and includes the whole SW Alai westwards from Alai valley and the main part (at least) of the Darvas zoogeographical district (i.e. Peter the Great range, Darvas range and certainly, Karategin range). The butterflies from the upper stream of Muksu as well as from the Obikhingou basin often have more developed yellowish suffusion on the HW band. Fringes contrasting.

***Paralasa jordana khramovi* subsp. nov.**

A small and yellow butterfly with a special shape of the widened HW yellow band and unusual characters of the underside. Populates only the valley of Ak-Bura river. Forms similar to the neighbouring *P. j. roxane* (GR.-GR.) and *P. k. alajense* KORB are unknown. Most probably it represents a bona species.

***Paralasa jordana summa* (AVINOV, 1910)**

This darkest and smallest *roxane* version inhabits East Pamirs. The FW band is very narrow, often with reduced reddish suffusion. The HW band is very small and often yellowish. Intermediate forms with true *roxane-kipnisi*-variants are not known because material from the northern part of East Pamirs is absent. It may represent a bona species or even a form of *P. ida* (GR.-GR.) (more details about possible status - see above).

**2. The *jordana*-group of subspecies.**

HW uniformly blackened, or maximum with a small reduced reddish spot; ♀♀ with widely brownish-dark basal parts. Prefers low altitudes.

***Paralasa jordana jordana* (STAUDINGER, 1982)**

A dark butterfly, FW band with developed reddish suffusion, ♀♀ with fully brownish basal FW part. In the typical specimens HW is totally blackish, but a lot of ♂♂ have more or less developed fully reddish band/spot - sometimes small, sometimes as large as in *P. j. roxane* (GR.-GR.). We found only one ♀ with such HW red spot which was collected by CHURKIN together with a very large series of typical ♀♀. The areal includes the low and medium altitude parts of the Aksu river basin. Material from the highlands of the Aksu basin is unknown. A series of typical specimens is known from the eastern tributary of Sokh river - Archa-Bashi river. It may represent a bona species.

***Paralasa jordana seravschanana* LUKHTANOV, 1999**

The characters are intermediate between the *roxane-kipnisi*-variant and *P. j. shachristana* (STSHETKIN & STSHETKIN). FW with partly enlarged androconium, yellow band and small dull reddish spot [similar to *P. j. summa* (Av.)]. The areal includes the upper half of the Seravshan river basin. The populations from the northern slopes of the eastern part of Turkestan range must be included in this taxon.

The situation with strange *kipnisi*-like ♀♀ from Ak-Terek river (the western tributary of Sokh r.) see above.

***Paralasa jordana shachristana* (STSHETKIN, & STSHETKIN, 1991)**

Androconium enlarged, FW band wide and yellow, HW blackish; ♀♀ with widely brownish FW basal part with short reddish border. The distribution area includes the western part of Seravshan range (and, according to some published photographs, the western part of Turkestan range) and Fanskie Mts. It seems that the northern macroslope of Ghissarsky range is populated by *P. icelos* (GR.-GR.) - at least the slopes near Anzob pass. The populations inhabiting the territories between the known distribution area of this taxon and *P. j. seravschanana* LUKHTANOV are not studied, but they must have intermediate characters according to all what is known about the complex.

**3. *Paralasa icelos* (GRUM-GRSHIMAILO, 1890)**

A very dark butterfly, inhabits the southern slopes of Ghissar and neighbouring ranges of South Ghissar. Only two specimens are known from the northern slopes of Ghissarsky range where, however, this species may have a more extended distribution. Androconial area very large, FW band very small and narrow.

**Zoogeographical notes:** First of all, the distribution of *P. j. roxane* (GR.-GR.) recalls the same of *P. k. kolesnichenkoi* CHURKIN & ZHDANKO. It penetrates the northern slopes of the range which limited the original distribution area: certainly, it came to the Isfaramsai basin from Alai Valley. It is most probable that *P. j. jordana* (STGR.) and *P. j. khramovi* subsp. nov. represent the taxa originating from North Alai. *Paralasa j. roxane* (GR.-GR.) is dominant as well as its older relative - *P. j. kipnisi* subsp. nov. from Darvas. The last taxon also may penetrate territories northwards from the main area - as a result, the populations with intermediate characters between dark subspecies and reddish subspecies occupy the mountains around the Matcha mountain system and the upper part of the Seravshan basin.

North Alai itself can be divided into 3 parts: the western part (Aksu basin, or, more correctly, Collectorsky range), the central part (Isfaramsai river, the territory between Collectorsky and Kichik-Akai ranges) and the eastern part (Ak-Bura basin). In addition, the true East Alai (more correctly, NE Alai) zoogeographically represents a part of Tian-Shan.

This scheme agrees with the data on the distribution of *Parnassius* (CHURKIN, 2009a; CHURKIN, 2009b) and is very important in the investigations of other complexes of Rhopalocera.

**C. Summary and questions**

The study of all taxa of the complex results in several conclusions. The composition of the complex in the past was as follows: the northern part of the Central Asian mountain system was populated by the butterflies with reddish FW band, the ♀♀ had reddish basal FW part; the southern part of the system was populated by the darker butterflies with yellow band and brown basal part of the FW. A cline in the characters of the eye-spot was developed, too: white pupils became reduced in the eastward direction, while the western area (especially the vicinity of Fergana Valley) was populated by the butterflies with an enlarged eye-spot with two white pupils; we suppose double eye-spot is the oldest character from the old colourful ancestor. Separately, there was the areal of the butterflies with reddish HW band - at the south-western edges of the mountain system, in the Vakhsh-Surkhob basin. When the mountains started to grow and the climate began changing, the distribution areas of different *Paralasa*-taxa were several times decreased, some taxa became extinct. During one of the warm periods the butterflies from Surkhob penetrate the "young" Alai valley where later *P. j. roxane* (GR.-GR.) originated. In Tian-Shan the "new" races which became most adapted to the new cold conditions originated in the largest valley - the Naryn river valley.

During some periods the genetic exchange between different survived populations was stopped, while during other periods it was re-established (moreover, this took place several times and probably in different combinations of the possible contacts). As a result of the old contacts, we can find some butterflies with reddish HW spots in Suusamyr or even further [but not close to the area of contact with *P. j. jordana* (STGR.) because such forms were practically eliminated here by the natural selection].

During the last interglacial period two most aggressive and adapted subspecies had an expansion - *roxane/kipnisi*-like butterflies appear in North Alai, while the *kolesnichenkoi*-group butterflies enlarged the inhabited area (including Inner Tian-Shan and Fergansky Range) and crossed Kyrgyzsky range. The distribution areas of the tianshanian taxa [*P. kusnezovi* (Av.)] and the Ghissar-Alai taxa [*P. jordana* (STGR.)] met in North Alai. Certainly, hybridization was impossible or the hybrids were not fertile - so that now we have two maximally different subspecies in the contact zone. However, the natural selection still has not "cleaned" the full distribution areas, so that the colouration or genitalia characters taken from different parts of the areals do not show any constant distinctions (in addition, the androconium also has an important role in reproduction; this makes the role of the genitalia less than in some other groups of species).



Another reason why specific distinctions are not found may be based on the species status of many taxa included into the *jordana*-group. If all *kusnezovi*-taxa represent one species composed of several "strong" taxa united by the system of well developed clines and clinal subspecies, the *jordana*-taxa may be divided into 3 or even 5 species. In this case the characters which have no sense for the *kusnezovi* ♂♂ could be specific for the ♂♂ of the species belonging to the *jordana*-group. If we follow this hypothesis, it is logically to suppose that it will be very hard to find and determine the specific distinctions. We suppose, that DNA-studies will not be the "key" to all problems of this complex because the main taxa are too young. Thus, the field work represents the best way to make true conclusions (as it was done for the Tianshanian species).

**Below, we are listing the most serious problems which cannot be solved now:**

1. Material from Kyrgyzsky range (including the western half) should be collected to complete the study of the Tianshanian taxa.
2. The status of the taxon *khramovi* **subspec. nov.** cannot be clarified without the material from the western slopes of Kichik-Alai.
3. Sokh river basin represents the key to the understanding of the status of *P. jordana* (STGR.). The situation at the western border of the distribution area is described in detail above - but the final decision cannot be found without a detailed study of the eastern contact zone.
4. The strange situation with some similarity between *P. j. summa* (Av.), *P. ida* (Gr.-Gr.), some forms of *P. j. seravschanica* LUKHTANOV and the highland populations of *P. j. kipnisi* **subspec. nov.**, needs further investigations. The material from the northern part of East Pamirs, East Transalai, Karakul lake area is important in the efforts to clarify the status of *P. j. summa* (Av.).

The actual relations between the complex in study and the taxa distributed southward from the Pamirs, including *P. mani* (DE NIC.), are not studied yet and represent another interesting problem.

**Acknowledgments:** Thanks to Mr. P. BOGDANOV (the State Darwin Museum), Dr. A. LVOVSKY (Zoological Institute of the Russian Academy of Sciences), Dr. PH. ACKERY (Natural History Museum, London), Dr. A. KOSTYUK (Zoological Museum Kiev), Dr. A. HAUSMANN (Zoologische Sammlungen des Bayerischen Staates, München) and to Dr. W. MEY (Zoologisches Museum der Humboldt Universität, Berlin) for providing the opportunity to work with the collections of these museums. We are much indebted to B. KHRAVMOV (St. Petersburg), V. TUZOV, P. BEDA, G. SAMODUROV and K. KOLESNICHENKO (Moscow), V. TREMASOV (Penza), I. PLIUSCH (Kiev) who helped us during the study or provided an opportunity to study some interesting material. Special thanks to Dr. ALEXEY DEVIATKIN for assistance with the English version of this article and for valuable advices in the course of the work. The photos were taken by V. PLETNEV, V. TUZOV, and B. KHRAVMOV.

#### References

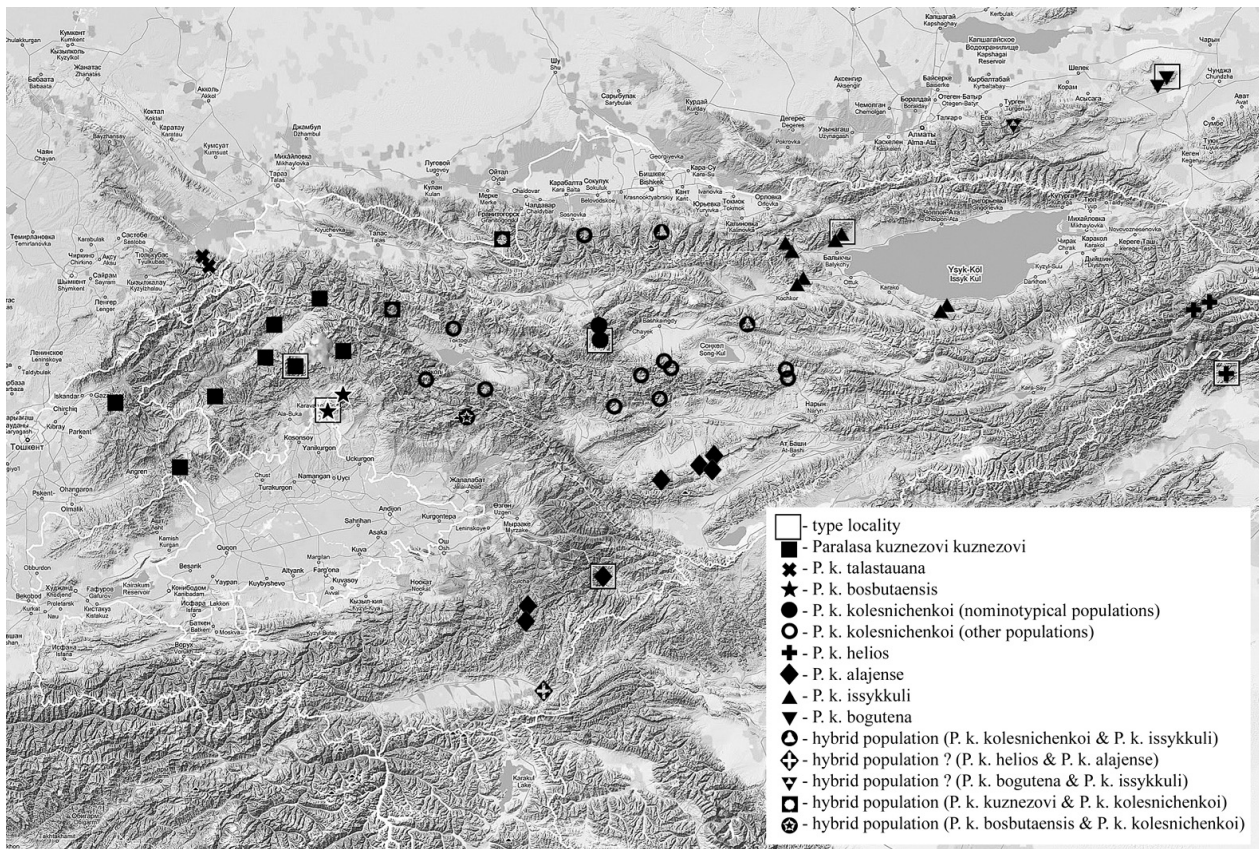
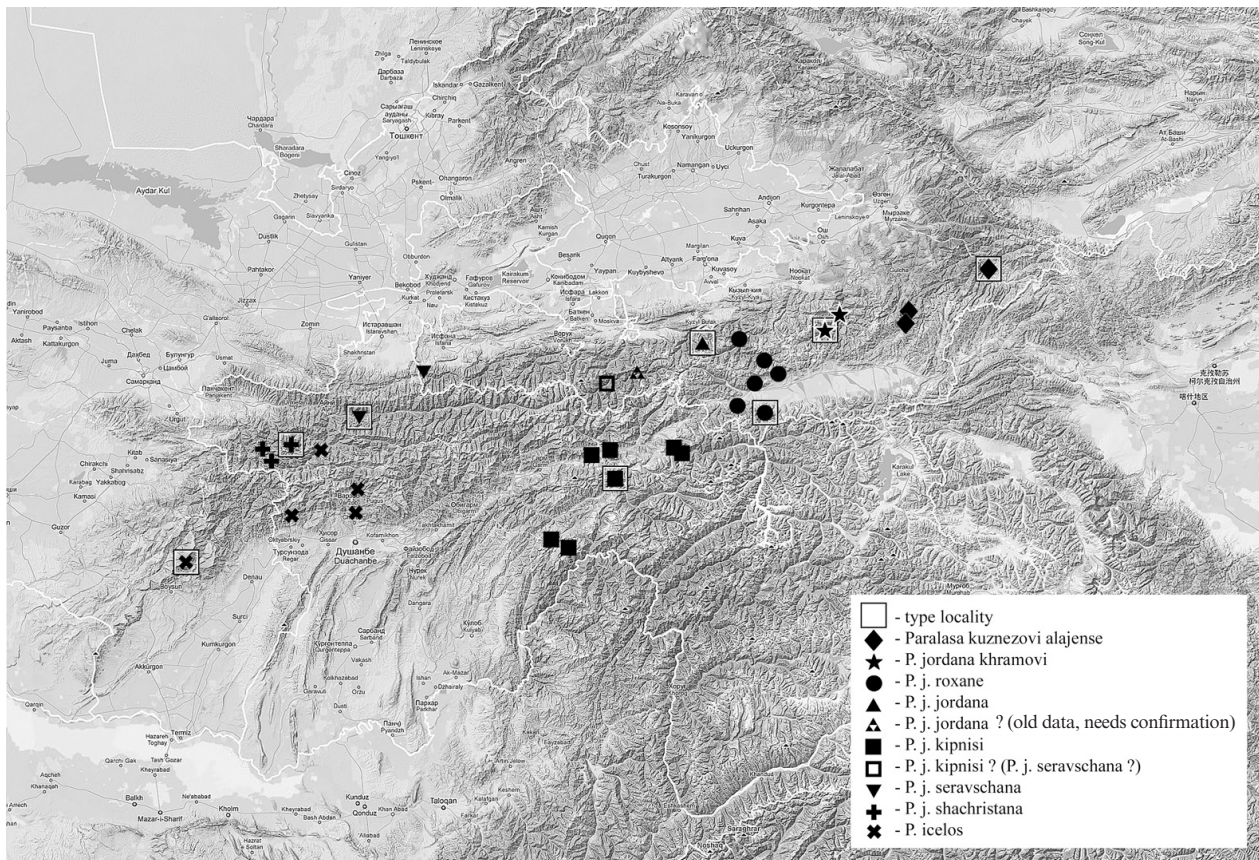
- AVINOV, A. N. (1910a): Formes nouvelles de Rhopaloceres de la Ferghana. - Horae Soc. Ent. Ros. **39**: 247-250, Tab. 14, St. Petersburg.
- AVINOV, A. N. (1910b): Contribution a la faune des Rhopaloceres du Pamir oriental. - Horae Soc. Ent. Ross. **39**: 225246, Tab. 14, St. Petersburg.
- BANG-HAAS, O. (1927): Horae Macrolepidopterologicae regionis Palaearcticae **1**. - Dresden.
- CHURKIN, S. V. (2002): Review of the *Erebia meta* species-group from the Tian-Shan and Alai regions with some notes on zoogeography and evolution (Lepidoptera, Satyridae). - Helios **3**: 50-93, pls. 5, 6, Moscow.
- CHURKIN, S. V. (2002a): Notes on *Parnassius* LATREILLE, 1804 from Tian-Shan and Alai. Part 1: *Parnassius simonius* STAUDINGER, 1889 - *P. boedromius* PUENGLER, 1901 (Lepidoptera, Papilionidae). - Atalanta **40** (3/4): 461-478, pl.3, Würzburg.
- CHURKIN, S. V. (2002b): Notes on *Parnassius* LATREILLE, 1804 from Tian-Shan and Alai. Part 3: *Parnassius charltonius* Gray, 1852 (Lepidoptera, Papilionidae). - Atalanta **40** (3/4): 411-434, pl.4, Würzburg.
- CHURKIN, S. V. & A. B. ZHDANKO (2001): Notes on *Paralasa kusnezovi* AVINOV (1910) with the description of a new subspecies, *P. kusnezovi kolesnichenkoi* ssp.n. (Lepidoptera, Satyridae). - Helios **2**: 195-197, pl. 16, Moscow.
- DELLA BRUNA, C., GALLO, E., LUCARELLI, M. & V. SBORDONI (2002): Guide to the butterflies of the Palearctic region. Satyrinae. Part II. Tribe Satyrini. Second edition. - Omnes Artes, Milano.
- GRUM-GRSHIMAILO, GR. E. (1885): Bericht über meine Reise in das Alai-Gebiet. In: ROMANOFF, N.M., Memories sur les Lépidoptères **2**: 212-247, St.-Petersbourg.
- GRUM-GRSHIMAILO, GR. E. (1887): Bericht über meine Reise in das östliche Buchara. In: ROMANOFF, N.M. Memoires sur les Lépidoptères **3**: 357-402, St.-Petersbourg.
- GRUM-GRSHIMAILO, GR. E. (1890): Le Pamir et sa faune lepidopterologique. In: ROMANOFF, N.M. Memories sur les Lépidoptères **4**: 17+575+2, Pl. A,I-XXI, St.-Petersbourg.
- ICZN - International Commission on Zoological Nomenclature (1999): International Code of Zoological Nomenclature, 4th ed. International Trust for Zoological Nomenclature. - London.
- KORB, S. (2004): Eine neue *Colias*-Unterart und eine neue *Paralasa*-Art aus Kirgisien (Lepidoptera, Pieridae und Nymphalidae). - Alexanor **23** (2): 115-117, Abb. 2, Paris.
- KORB, S. (2008): New subspecies of *Paralasa bogutena* V. LUKHTANOV ET A. LUKHTANOV, 1994 from Terskey Ala-Too mountain ridge in Kirghizia (Lepidoptera: Satyridae). - Eversmannia **15/16**: 69-71, Tula.
- KORB, S. (2010): Une nouvelle sous-espece de *Paralasa jordana* (STAUDINGER, 1882) des monts Transalai (Kirghizie) (Lepidoptera Nymphalidae Satyrinae). - Alexanor **24** (3-4): 146-148, Paris.
- LUKHTANOV, V. A. (1999): Neue Taxa und Synonyma zentralasiatischer Tagfalter. - Atalanta **30** (1/4): 135-150, Würzburg.
- LUKHTANOV, V. A. & A. G. LUKHTANOV (1994): Eine neue Unterart aus der Gattung *Paralasa* aus dem Boguty-Gebirge in Südoskaschstan (Lepidoptera, Satyridae). - Atalanta **25** (1/2): 167-169, Farbt. 5b., Würzburg.
- STSHETKIN, JU. L. & JU. JU. STSHETKIN (1991): New data on subgenus *Paralasa* MOORE from Pamiro-Alai (Lepidoptera, Satyridae). - Dokl. Akad. Nauk Tadzh. SSR **34** (1): 63-65 (in Russian).
- RILEY, N. & A. GABRIEL (1924): Catalogue of the type specimens of Lepidoptera Rhopalocera in the British Museum. Part I. Satyridae. - London.
- SAKAI, S. (1978): Butterflies of Afghanistan. - Kodansha, Tokyo (in Japanese).
- STAUDINGER, O. (1887): Centralasiatische Lepidopteren. - Stettin. Ent. Z. **48**: 49-102, Berlin.
- STAUDINGER, O. & A. BANG-HAAS (1882): Über einige neue *Parnassius*- und andere Tagfalter-Arten Central Asiens. - Berl. Ent. Z. **26** (1): 161-177, Taf. 1-2, Berlin.
- STAUDINGER, O. & H. REBEL (1901): Catalog der Lepidopteren des palaearktischen Faunengebietes. 1. Theil: Fam. Papilionidae - Hepialidae - 3. Auflage. - Friedländer & Sohn, Berlin.
- TOROPOV, S. A. & A. B. ZHDANKO (2006): The butterflies (Lepidoptera, Papilionoidea) of Dzhungar, Tien Shan, Alai and Eastern Pamirs **1**. Papilionidae, Pieridae, Satyridae. - Bishkek.
- TSHIKOLOVETS, V. V. (1997): The Butterflies of Pamirs. - Bratislava.
- TSHIKOLOVETS, V. V. [2004] (2005): Butterflies of Tadjikistan. - Kyiv-Bрно.
- TSHIKOLOVETS, V. V. (2005): Butterflies of Kyrgyzstan. - Brno-Kyiv.
- TUZOV, V. K., BOGDANOV, P. V., DEVIATKIN, A. L., KAABAK, L. V., KOROLEV, V. A., MURZIN, V. S., SAMODUROV, G. D. & V. A. TARASOV (1997): Guide to the butterflies of Russia and adjacent territories **1**. - Pensoft, Sofia-Moscow.



# Addresses of the authors

SERGEI V. CHURKIN  
Jubileinyi pr., 14-168  
Reutov, 143952, Moscow reg., Russia  
serghelios2007@yahoo.com

VLADIMIR A. PLETNEV  
All-Russian Institute of Plant Protection Chemicals,  
Ugreshskaya str. 31  
Moscow, 115088, Russia





# Colour plate I



Abb. 1-8, 11: *Paralasa kusnezovi kusnezovi* (AVINOV, 1910): (1) ♂, West Tian-Shan, Chatkal Mts., Chapchama Pass, 18.07.2000, A. KLIMENKO leg. (2) ♀, West Tian-Shan, Chatkal Mts., Sary-Chelek Lake, 18.07.2000, K. KOLESNICHENKO leg. (3, 4) ♂, West Tian-Shan, Kuraminsky Mts., Kamchik Pass, 3.08.1996, 2200-2500 m, LEGEZIN leg. [identical to *styx* (O. BANG-HAAS, 1927)]. (5) ♂, West Tian-Shan, Sandalash Mts., Chakmak-Su, 2300-2700 m, 14.-17.07.2000, A. KLIMENKO leg. (6a) ♂, West Tian-Shan, Talassky Alatau, Karabura Pass, 2500-3000 m, 15.-20.07.1989, G. SAMODUROV leg. (6b) ♀ hybrid between *P. k. kusnezovi* (Av.) and *P. k. kolesnichenkoi* CHURKIN & ZHDANKO, West Tian-Shan, Chatkal Mts., Sary-Chelek Lake, Aflautun r., 25.07.1997, A. KLIMENKO leg. (7, 8) holotype of *styx* O. BANG-HAAS, 1927, data see text. (11) ♂, a form with *talastauana*-colouration, West Tian-Shan, Kuraminsky Mts., Kamchik Pass, 2300-2500 m, 11.-13.07.1997, S. VASHCHENKO leg. Abb. 9, 10, 12: *Paralasa kusnezovi talastauana* LUKHTANOV, 1999: (9, 12) ♂, West Tian-Shan, Talassky Alatau, Aksu-Zhebagly res., Taldy-Bulak, 2800 m, 25.07.1995, A. ZHDANKO leg. (10) ♀, Talassky Alatau, Aksu-Zhebagly res., Darbaza, 28.07.1991, A. ZHDANKO leg. Abb. 13-16: ♂♂ hybrid between *P. k. kusnezovi* (Av.) and *P. k. kolesnichenkoi* CHURKIN & ZHDANKO: (13) *kusnezovi*-variant, Tian-Shan, Uzun-Akhmat river valley, at the southern edges of Talassky Alatau. The label is: Talassky Alatau, 35 km NW Chon-Aryk v., 2200-2700 m, 28.06.2006, S. CHURKIN leg., (14, 16) *kolesnichenkoi*-variant, same data as 13, (15) variant similar to *issykkuli*, same data as 13. Abb. 17-20: *Paralasa kusnezovi boshtuensis* subsp. nov.: (17, 20) HT ♂, Kyrgyzstan, Bosbu-Too Mts., southern slopes, 2500-2800 m, 2.07.2008, S. CHURKIN leg. (18) PT ♀, same data as 17, (19a) PT ♂, same data as HT, (19b) PT ♀, same data as HT. Abb. 21-24: *Paralasa kusnezovi bogutena* LUKHTANOV, & LUKHTANOV, 1994: (21, 24) ♂, North Tian-Shan, Zailiysky Alatau, Boguty Gebirge, 2-4.06.2004, A. ZHDANKO leg. (22) ♀, same data as 21 (typical colouration), (23) ♀, same data as 21 (with developed white ocelli). Abb. 25, 26: *Paralasa kusnezovi kolesnichenkoi* CHURKIN & ZHDANKO, 2001: (25) ♂, Moldo-Too Mts. (southern slopes), 50 km NEE Kazarman, 2300-2700 m, 10.-21.07.2005, CHURKIN S. leg. (aberration with additional eye-spot), (26) ♀, Moldo-Too Mts. (northern slopes), Karakiche R., 2900-3250 m, 18.07.2007, S. CHURKIN leg. Abb. 27, 28: *Paralasa kusnezovi helios* (O. BANG-HAAS, 1927), ♂, Kyrgyzian Kashgaria, Chinese Kyzyl-Su r., Alai Mts. (south-eastern edges), Irkeshtam, 3050 m, 17.07.2005, S. CHURKIN leg.



## Colour plate 2



**Abb. 1-12:** *Paralasa kusnezovi kolesnichenkoi* CHURKIN & ZHDANKO, 2001: (1, 4) PT ♂, Suusamyrtas Mts., Kokemeren R., Kyzyl-Oi vic., 2200 – 2500 m, 19 - 20.07.1999, K. KOLESNICHENKO. (2) PT ♀, same data as 1. (3) ♀ (form with second white pupil), Fergansky Mts. (northern edges), Karasu Lake, 2200-2500 m, 2.-7.07.2001, S. CHURKIN leg. (5, 8) ♂ (dark variant), Moldo-Too Mts. (northern slopes), Karakiche R., 2900-3250 m, 18.07.2007, S. CHURKIN leg. (6) ♀, Moldo-Too Mts. (northern slopes), Kavak-Too Range, Minkush vic, 2700-3100 m, 30.07.2008, S. CHURKIN leg. (7) ♂ (dark variant, form with reddish HW spot), Kyrgyzsky Alatau, 25 km S Merke, Mulaly Mt., 2900 m, 09.08.1996, A. ZHDANKO leg. (9, 10) ♂ (dark variant), Kyrgyzsky Mts., Aksu r., 24.07.2009, 2000-2600 m, V. TREMASOV leg. (11, 12) ♂, Baidulu range, 34 km S Dolon pass, 1600m, 14.07.1998, BERDYEV leg. **Abb. 13-20:** *Paralasa kusnezovi alajense* KORB, 2004: (13, 16) ♂, NE Alai, Gulcha r., Kichi-Karakol v., 2500-2800 m, 24.06.2008, S. CHURKIN leg. (14) ♀, NE Alai, Gulcha r., 4 km NE Kichi-Karakol v., 2400-2450 m, 25.-26.06.2008, S. CHURKIN leg. (15a) ♂ (tendency to *helios*-colouration), Inner Tian-Shan, Dzhaman-Too, Karasu r., 15.-29.07.2010, S. CHURKIN leg. (15b) ♂ (typical colouration), same data as 15a. (17, 20) ♂, Beuroily loc., 2650-2900 m, 10.-11.07.2006, S. CHURKIN leg. (18) ♂, (tendency to *issykkuli* colouration) same data as 17. (19) ♀, same data as 17. **Abb. 21-25:** *Paralasa kusnezovi issykkuli* LUKHTANOV, 1999: (21, 24) ♂, north-western edges of Terskey Alatau Mts., Karatau range, shores of Orto-Takoi lake, 1800-2200 m, 13.07.1998, S. CHURKIN leg. (22) ♂, same data as 16, (23) ♀, same data as 16. (25) ♂, western edges of Kungei Alatau, Boom valley, Kok-Mainak v., 1900-2000 m, 7.07.1998, S. CHURKIN leg. **Abb. 26-28:** *Paralasa kusnezovi kolesnichenkoi* CHURKIN & ZHDANKO, 2001: (26, 28) ♂, [Kyrgyzsky range], Alamedin r., 3.-4.07.1910, A. GOLBECK leg., coll. AVINOV. [wrong paratype of *P. jordana shachristana* (STSHETKIN & STSHETKIN)]. (27) ♀, same data as 20 [wrong paratype of *P. jordana shachristana* (STSHETKIN & STSHETKIN)]. (28)



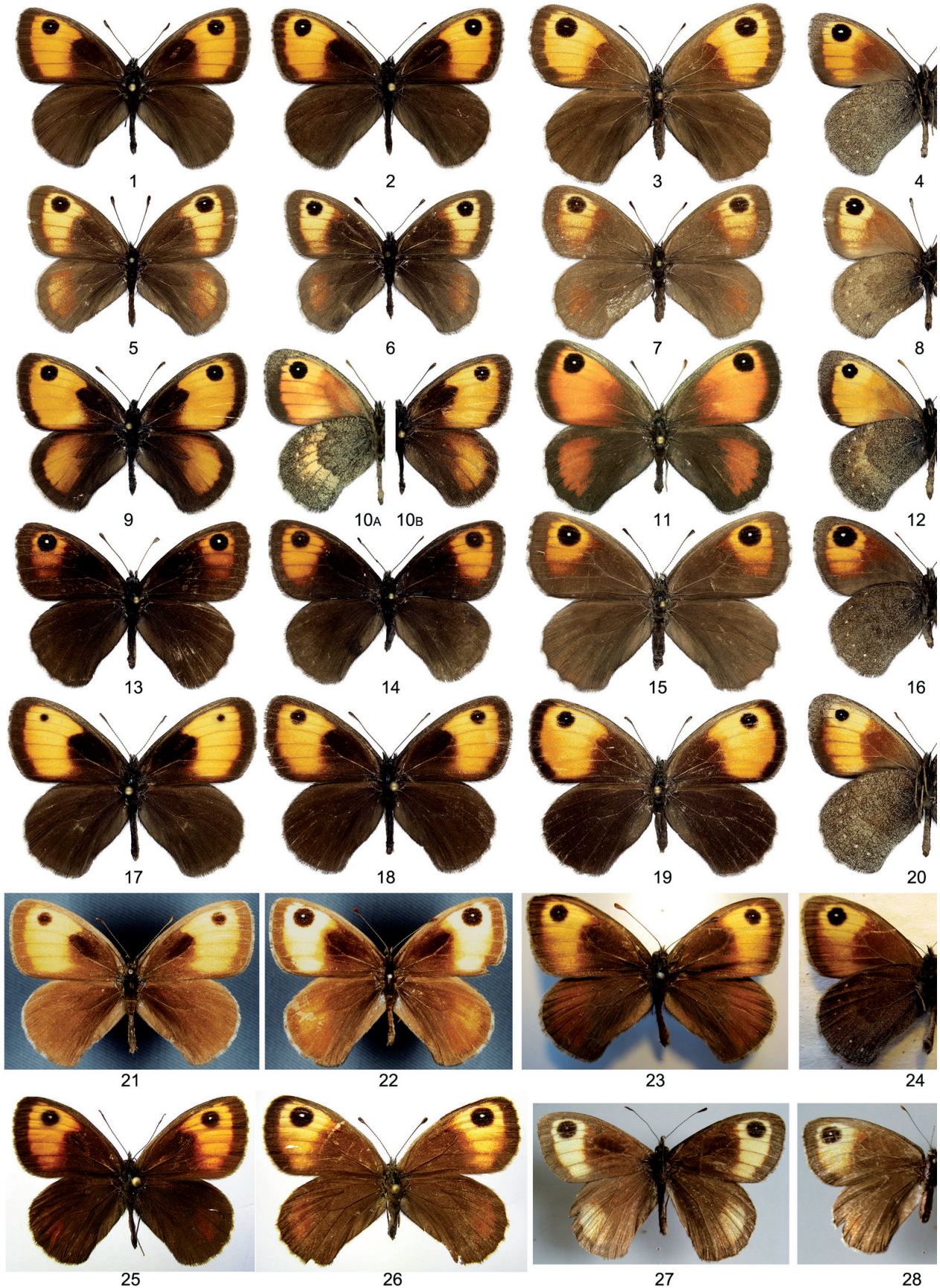
# Colour plate 3



Abb. 1-8: *Parolasa jordana roxane* (GRUM-GRSHIMAILO, 1887): (1, 4) ♂, West Transalai, Aram-Kungei r., 2900 m, 10.07.1992, S. CHURKIN leg. (2) ♂, same data as 1. (3) ♀, same data as 1. (5, 8) ♂, North Alai, Isfaramsai r., 2400 m, Langar v., Kaingdy r., 13.-14.07.1995, S. CHURKIN leg. (6) ♂, same data as 5. (7) ♀, same data as 5. Abb. 9-16: *Parolasa jordana jordan* (STAUDINGER, 1982) (9, 12) ♂ (typical form), Alai, Kollektorsky range, Jordan v., Dugoba r., 2000 m, 28.06.1995, S. CHURKIN leg. (10) ♂ (form with reddish spot), same data as 9. (11) ♀, same data as 9. (13a, 16) ♂ (form), Alai, Aksu r. val., Kara-Shoro loc., 2400 m, 20-25.07.1995, S. CHURKIN leg. (13b) ♂ (form), same data as 13a. (14) lectotype ♂, data in the text. (15) ♀, same data as 13. Abb. 17-24: *Parolasa jordana kipnisi* subspec. nov. (17) HT ♂, Tadjikistan, Peter the Great range, Gardani-Kaftar Pass, 16.VII.1911, leg. A. GOLBECK. (18, 20) PT ♂, Tadjikistan, Peter the Great range, Muksu r., Muk vic., 2400-2700 m, 22.-30.07.2009, S. SALUK leg. (19) PT ♀, same data as 18. (21, 22) HT ♂ of *subocellata* STGR., data in the text. (23, 24) ♂, Tadjikistan, Peter the Great range, Muksu r., Depshar v., 2200-2500 m, 18.07.2009; S. SALUK leg. Abb. 25-28: *Parolasa jordana seravschan* LUKHTANOV, 1999: (25, 28) ♂ (form with reddish HW spot), Turkestansky Mts., Kyrgyzstan, Batken region, Karavschin r., Dzheptyk, 2400 m, 5.08.2009, A. SOCHIVKO leg. (26) ♂ (dark form), same data as 25. (27) ♀ (*kipnisi*?), Matcha system, Turkestansky Mts. (eastern edges), Ak-Terek r., Korgon v., 1800-2200 m, 29.-30.06.1999, A. PETROV leg.



# Colour plate 4



**Abb. 1-4:** *Paralasa jordana shachristana* (STSHETKIN, & STSHETKIN, 1991): (1, 4) ♂, Tadjikistan, West Ghissar, Seravshansky range, Fanskie Mts., Urech r., Artuch camp, 2200-2400 m, 6.-14.07.1998, V. VASILCHENKO leg. (2) ♂, same data as 1. (3) ♀, Ghissarsky range, Shing r., Khasor-Chashma lake, 2800 m, S. CHURKIN leg. **Abb. 5-8:** *Paralasa jordana summa* (AVINOV, 1910): (5, 8) ♂, East Pamirs, 40 km SW Murgab, 28.07.2000, NEFOROSNYI V. leg. (6) ♂, East Pamirs, Chakabai Mts., Shahasai r., 27.07.2000, A. IRLACH leg. (7) ♀, same data as 5. **Abb. 9-12:** *Paralasa jordana khranovi* subsp. nov.: (9, 12) HT ♂, North Alai, Kichik-Alai range, Ak-Bura r., 2500-2800 m, 28.06.2009, S. CHURKIN leg. (10a) PT ♂, North Alai, Kichik-Alai range, Ak-Bura r., 2200 m, 3.07.2011, S. CHURKIN leg. (10b) PT ♂, North Alai, Kichik-Alai range, Ak-Bura r., 2600-2800 m, 28-29.2008, S. Churkin leg. (11) PT ♀, same data as 10a. **Abb. 13-16:** *Paralasa icelos* (GRUM-GRSHIMAILO, 1890): (13) ♂, Ghissar range, Kondara, 1900 m, 24.05.2000, YU. YU. STSHETKIN leg. (14, 16) ♂, Ghissar range, Karatag r., Zorgo Mt., 1900-2200 m, 16.07.2003, PEREPECHAENKO leg. (15) ♀, same data as 14. **Abb. 17-21:** *Paralasa kusnezovi helios* (O. BANG-HAAS, 1927): (17, 20) ♂, Central Tian-Shan, Sary-Dzhas r., Kaingdy-Katta Mts., Tashkoro v., 2500-2700 m, 4.-7.07.1989, S. CHURKIN leg. (18) ♂, same data as 17, (19) ♀, same data as 17, (21) lectotype ♂, data in the text. **Abb. 22-24:** *Paralasa jordana roxane* (GRUM-GRSHIMAILO, 1887): (22) LT ♂ of *fasciata* STGR., data in the text. (23, 24) LT ♂, data in the text. **Abb. 25, 26:** *Paralasa jordana seravshana* LUKHTANOV, 1999: (25) HT ♂, Tadjikistan, 60 km E Aini, Seravshan Range, Dascht, 2100-2600 m, 20.07.1994, A. LUKHTANOV leg. (26) PT ♀, same data as 25. **Abb. 27, 28:** *Paralasa jordana summa* (AVINOV, 1910): (27) LT ♂, data in the text. (28) ParaLT ♀, data in the text.